(rf)

Access DB# 175591

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 12-28-05
Art Unit: 1752 Phone Number 30 2-1333 Serial Number: 10/679,182
Mail Box and Bldg/Room Location: 9660 (Rem) Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Plz. see B76.

Inventors (please provide full names):

Earliest Priority Filing Date:

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Plz. Search for a silicon polymer which comprises the moieties (or the groups), which are represented by the Formula I, II, or III (shown in Cl. # 2), in the backbone or in the side gp.

****

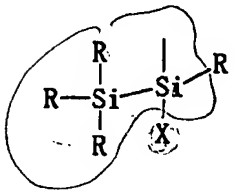
STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: MRH	NA Sequence (#)	STN √
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#) 1	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed: 1/5/06	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time:	Other	Other (specify)

LISTING OF THE CLAIMS:

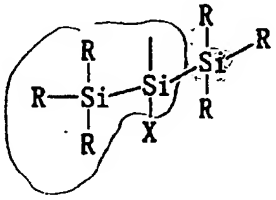
This listing of claims will replace all prior versions, and listings, of claims in the present application.

Claim 1 (Cancelled)

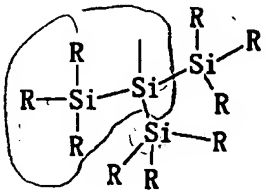
Claim 2 (Currently Amended) The composition of claim [[1]] 3, wherein said Si-$(Si)_n$ moieties in the side group comprise formula I, II or III.



Formula I



Formula II



Formula III

wherein, R is each independently selected from an organic moiety, a halogen or a silane, and X is each independently selected from an organic moiety or a halogen, said organic moiety is substituted or unsubstituted hydrocarbon comprising linear or branched alkyl, aryl, halogenated linear or branched alkyl, halogenated aryl, cyclic alkyl, halogenated cyclic alkyl, or any combination thereof.

Claim 3 (Currently Amended) A composition suitable for formation of a spin-on antireflective layer comprising

a crosslinking component;

a silicon polymer having a plurality of reactive sites distributed along the polymer for reaction with the crosslinking component, and chromophore moieties, wherein said

Please see cl. #2

silicon polymer comprises Si-$(Si)_n$ moieties in the back bone or in the side group, wherein n is an integer of 1-15 and the Si-$(Si)_n$ moieties represent linear, branched or cyclic silanes, or any combination thereof; and

~~The composition of claim 1, further comprising~~ an acid generator.

Claim 4 (Original) The composition of claim 3, wherein the acid generator is a thermal acid generator.

Claim 5 (Original) The composition of claim 3, wherein the acid generator is a photoacid generator.

Claim 6 (Currently Amended) The composition of claim [[1]] 3, wherein said reactive sites are selected from the group consisting of alcohols, amino groups, imino groups, carboxlic acids, vinyl ethers, expoxides and mixtures thereof.

Claim 7 (Currently Amended) The composition of claim [[1]] 3, wherein said chromophore moieties contain unsaturated carbon-carbon bonds.

Claim 8 (Currently Amended) The composition of claim [[1]] 3, wherein said chromophore moieties contain linear alkyl, branched alkyl or cycloalkyl.

Claim 9 (Currently Amended) The composition of claim [[1]] 3, wherein said crosslinking compound comprises a glycoluril compound.

STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher or contact*:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art* ***found****, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art* ***not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

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=> fil reg
FILE 'REGISTRY' ENTERED AT 16:59:07 ON 05 JAN 2006
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=> d his

     (FILE 'HOME' ENTERED AT 14:37:09 ON 05 JAN 2006)

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                E US20050074689/PN
L1            1 S E3
                SEL RN

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L2            5 S E1-5

     FILE 'HCAPLUS' ENTERED AT 14:38:27 ON 05 JAN 2006
L3            1 S L1 AND L2

     FILE 'LREGISTRY' ENTERED AT 14:53:25 ON 05 JAN 2006
L4              STR

     FILE 'REGISTRY' ENTERED AT 14:56:31 ON 05 JAN 2006
L5           50 S L4
L6              STR L4
L7           50 S L6
L8              STR L6
L9           50 S L8
L10             STR L6
L11          50 S L10
L12       45932 S (C(L)H(L)SI(L)X(L)O)/ELS (L) 5/ELC.SUB
L13             STR L10
L14             SCR 2043
L15             SCR 1734 OR 1735
L16          50 S L13 AND L14 NOT L15
L17             STR L13
L18          50 S L17 AND L14 NOT L15
L19        1136 S L17 AND L14 NOT L15 FUL
                SAV L19 SLEE782A/A
L20           1 S L19 AND L2

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L21          669 S L19
L22        14642 S ANTIREFLECT? OR ANTI(A)REFLECT?
L23       114642 S LITHO? OR PHOTOLITHO? OR CHROMOLITHO?

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L24         1129 S L19 AND (C(L)H(L)SI)/ELS
L25          476 S L24 AND X/ELS
L26          163 S L25 AND 4/ELC.SUB
L27          352 S L24 AND O/ELS
L28          170 S L27 AND 4/ELC.SUB
L29          100 S L25 AND L27
L30           67 S L29 AND L12
L31          301 S L27 AND ELC.SUB<6

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L32          139 S L26
L33           83 S L28
L34           22 S L30
L35          131 S L31
L36            6 S L21 AND L22
L37           40 S L21 AND L23
L38           30 S (L32 OR L33 OR L34 OR L35) AND L23
L39           40 S L37 OR L38
L40           33 S L36 OR L38
L41           10 S L37 NOT L40
L42       521495 S REFLECT?
L43           21 S L21 AND L42
L44        28722 S REFLECT?(2A)(FILM? OR LAYER? OR COAT?)
L45            2 S L21 AND L44
L46           21 S L45 OR L43
L47           33 S L40 OR L45
L48           16 S L43 NOT (L47 OR L41)

     FILE 'REGISTRY' ENTERED AT 16:59:07 ON 05 JAN 2006

=> d l19 que stat
L14               SCR 2043
L15               SCR 1734 OR 1735
L17               STR

Si✓G2✓G1          C@4
 1   2   3

VAR G1=4/X/SI
REP G2=(1-15) SI
```

NODE ATTRIBUTES:
NSPEC IS RC AT 4
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE
L19 1136 SEA FILE=REGISTRY SSS FUL L17 AND L14 NOT L15

100.0% PROCESSED 1351 ITERATIONS 1136 ANSWERS
SEARCH TIME: 00.00.01

=> fil hcap
FILE 'HCAPLUS' ENTERED AT 17:00:02 ON 05 JAN 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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=> d l47 1-33 cbib abs hitstr hitind

L47 ANSWER 1 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2005:822667 Document No. 143:219454 Chemically amplified photoresists with high sensitivity, resolution, and less scums, silsesquioxane compositions therefor, and method for forming precise patterns therewith. Hatakeyama, Jun (Shin-Etsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2005221714 A2 20050818, 102 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2004-28994 20040205.
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The compns. contain (A) organopolysiloxanes prepd. by hydrolytic condensation of silane monomers R1SiX3 (R1 = org. group having acid-decomposable group; X = halo, OH, C1-10 alkoxy or acyl) and optionally other silane monomers R0SiX3 (R0 = org. group for tight

adhesion; X = same as above) and (B) polymers having repeating units [R2C(CO2R5)CH2] [R2 = H, Me, F, CF3, CN, CH2CO2R3, CH2OR4; R3 = C1-4 linear or branched alkyl; R4 = H, C1-4 linear or branched alkyl or acyl; R5 = R6R7CCH2SiR8R9R10, R11C(CH2SiR12R13R14)2, C(CH2SiR15R16R17)3, Q1, Q2; R6, R7, R11 = H, C1-10 linear, branched, or cyclic alkyl; R8-R10, R12-R17 = C1-10 linear, branched, or cyclic alkyl, C6-10 aryl, trialkylsilyl, Si-contg. group bonded with Si in the formula by siloxane or silalkylene linkage; R28-R30 = C1-20 linear, branched, or cyclic alkyl; R18, R19, R22, R23, R26, R27, R31, R32, R35, R36, R39-R41 = H, C1-20 linear, branched, or cyclic alkyl; R20, R21, R24, R25, R33, R34, R37, R38 = H, C1-20 linear, branched, or cyclic alkyl, fluorinated C1-20 alkyl, C6-20 aryl; p, q, r, s = 0-10; $1 \leq p + q + s \leq 20$]. Also claimed are compns. contg. A and (C) copolymers of silyl-branched vinyl repeating units and other repeating units having groups whose alk. soly. can be increased by acids (both Markush given). Alternatively, the compns. contain (R1SiOx) (R1 = same as above; x = 1.0-1.5) instead of A. Also claimed are chem. amplified photoresists contg. the above compns., acid generators, org. solvents, and optionally dissoln. inhibitors. Basic compds. may be contained in the photoresists. In the process, the photoresists are applied on substrates (e.g., semiconductor wafers equipped with photoresist underlayers), heat treated, exposed to high-energy rays or electron beams via photomasks, and developed (after further heat treatment) to give patterns. After the patterns are formed, layers under them may be etched with O plasma or with Br- or Cl-contg. halogen gases.

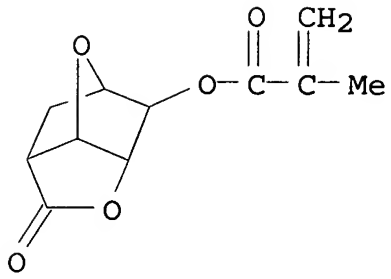
IT **630417-20-8P**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(silsesquioxane-based chem. amplified photoresists with high sensitivity, resoln., and less scums for forming precise patterns)

RN 630417-20-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 4-ethenylphenol and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

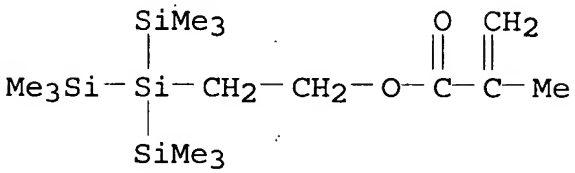
CM 1

CRN 274248-05-4
CMF C11 H12 O5



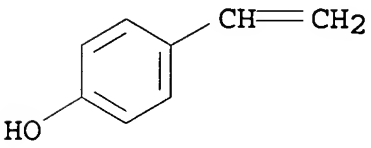
CM 2

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 3

CRN 2628-17-3
CMF C8 H8 O



IC ICM G03F007-075
ICS C08F030-08; G03F007-039; H01L021-027; C08G077-14
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
ST chem amplified pos photoresist resoln sensitivity; silsesquioxane

pos photoresist patterning **photolithog**; polyhedral oligomeric silsesquioxane branched acrylic photoresist; semiconductor photoresist electron beam high energy **lithog**; photoresist underlayer etching oxygen plasma halogen gas

IT **Photolithography**
(high-energy ray; silsesquioxane-based chem. amplified photoresists with high sensitivity, resoln., and less scums for forming precise patterns)

IT Electron beam **lithography**
Etching
Semiconductor device fabrication
(silsesquioxane-based chem. amplified photoresists with high sensitivity, resoln., and less scums for forming precise patterns)

IT 250265-26-0, ARC-DUV 30
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**antireflective** layers; silsesquioxane-based chem. amplified photoresists with high sensitivity, resoln., and less scums for forming precise patterns)

IT **630417-20-8P** 800397-92-6P 802917-23-3P 802986-14-7P 819837-18-8P 862379-20-2P 862379-21-3P 862383-75-3P 862383-77-5P
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(silsesquioxane-based chem. amplified photoresists with high sensitivity, resoln., and less scums for forming precise patterns)

L47 ANSWER 2 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

2005:303259 Document No. 142:382179 Silicon-containing compositions for spin-on ARC/hard mask materials. Angelopoulos, Marie; Huang, Wu-Song; Mahorowila, Arpan P.; Moreau, Wayne; Pfeiffer, Dirk; Scooriyakumaren, Ratnam (USA). U.S. Pat. Appl. Publ. US 2005074689 A1 20050407, 11 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-679782 20031006.

AB **Antireflective** compns. characterized by the presence of an Si-contg. polymer having pendant chromophore moieties are useful **antireflective** coating/hard mask compns. in **lithog**. processes. These compns. provide outstanding optical, mech. and etch selectivity properties while being applicable using spin-on application techniques. The compns. are esp. useful in

lithog. processes used to configure underlying material layers on a substrate, esp. metal or semiconductor layers.

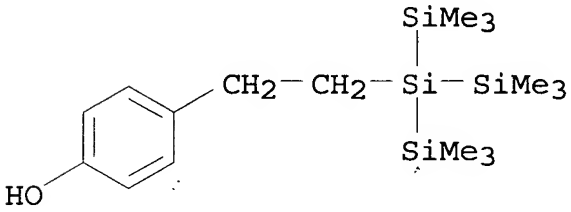
IT **849346-62-9P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. of silicon-contg. compns. for spin-on ARC/hardmask materials)

RN 849346-62-9 HCAPLUS

CN Formaldehyde, polymer with 4-[2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl]phenol (9CI) (CA INDEX NAME)

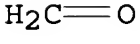
CM 1

CRN 849346-60-7
CMF C17 H36 O Si4



CM 2

CRN 50-00-0
CMF C H2 O



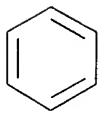
IC ICM G03F007-00
INCL 430270100; 430322000; 430323000; 430324000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38
ST **photolithog** silicon compn spin **antireflective** coating hard mask material
IT **Antireflective** films
Photolithography
(silicon-contg. compns. for spin-on ARC/hardmask materials)

IT **849346-62-9P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. of silicon-contg. compns. for spin-on ARC/hardmask materials)

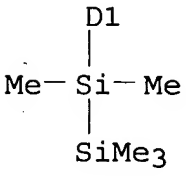
L47 ANSWER 3 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2004:1036532 Document No. 142:45894 Resists for EUV **lithography** comprising silicon and boron-containing polymers. Dai, Junyan; Ober, Christopher K.; Wang, Lin; Cerrina, Franco; Nealey, Paul (USA). U.S. Pat. Appl. Publ. US 2004241574 A1 20041202, 24 pp. (English). CODEN: USXXCO. APPLICATION: US 2004-800195 20040312. PRIORITY: US 2003-PV454062 20030312.
AB Resist compns. contg. silicon, boron, or both silicon and boron may be used with ultra-violet **lithog.** processes and extreme ultra-violet (EUV) **lithog.** processes to increase the reactive ion etch resistance of the resist compns., improve transmission of the resist materials, and to dope substrates.
IT **803688-08-6P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resists for EUV **lithog.** comprising silicon and boron-contg. polymers)
RN 803688-08-6 HCAPLUS
CN Disilane, (ethenylphenyl)pentamethyl-, polymer with (chloromethyl)ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 139598-17-7
CMF C13 H22 Si2
CCI IDS

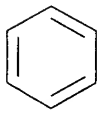


D1—CH═CH$_2$



CM 2

CRN 30030-25-2
CMF C9 H9 Cl
CCI IDS



D1—CH$_2$—Cl

D1—CH═CH$_2$

IC ICM G03C001-76
INCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
ST resist EUV **lithog** silicon boron polymer contg

IT 623-47-2, Ethyl propiolate 17702-41-9, Decaborane
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of resists for EUV **lithog.** comprising silicon and boron-contg. polymers)

IT 18178-04-6P 51999-28-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. of resists for EUV **lithog.** comprising silicon and boron-contg. polymers)

IT 97822-61-2P 105729-79-1DP, Isoprene-styrene block copolymer, reaction products with alkylsilanes, alkylphenylsilanes and borane derivs. 557099-43-1P, Dimethylphenylvinylsilane-isoprene block copolymer 803688-07-5P, Isoprene-trimethylsilylstyrene block copolymer **803688-08-6P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resists for EUV **lithog.** comprising silicon and boron-contg. polymers)

IT 766-77-8DP, Dimethylphenylsilane, reaction products with isoprene-styrene copolymer 12076-99-2DP, reaction products with isoprene-styrene block copolymer 51458-06-1DP, Dimesitylborane, reaction products with isoprene-styrene copolymer 803688-09-7P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resists for EUV **lithog.** comprising silicon and boron-contg. polymers)

L47 ANSWER 4 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2004:640592 Document No. 142:363623 Silicon backbone polymers as EUV resists. Bravo-Vasquez, Juan Pablo; Kwark, Young-Je; Ober, Christopher K.; Cao, Heidi B.; Deng, Hai; Meagley, Robert P. (Department of Materials Science & Engineering, Cornell Univ., Ithaca, NY, 14853, USA). Proceedings of SPIE-The International Society for Optical Engineering, 5376(Pt. 2, Advances in Resist Technology and Processing XXI), 739-745 (English) 2004. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB To fulfill industry requirements for EUV resists, the development of entirely new polymer platforms is needed. In order to address transparency issues, we have been studying low absorbance materials, specifically silicon based resist platforms. In this approach, we have synthesized and studied resist materials based on polysilanes, polycarbosilane, and polysilsesquiazanes. Poly(methylphenylsilane) was chem. modified to incorporate polar groups to enhance soly. in polar solvents and developer soln. Copolymn. of the modified

polysilane with an acid sensitive monomer has been used to produce chem. amplified copolymers. Preliminary studies have shown promising behavior. Polysilsesquiazanes-based resist were synthesized and tested using a 248 nm stepper. They showed excellent **lithog.** performance but some issues, including long term stability, are presently unknown. Our strategy to produce silicon-based resist together with outgassing and **lithog.** issues were discussed.

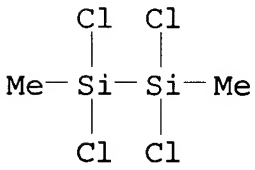
IT **78433-16-6P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(silicon backbone polymers as EUV resists)

RN 78433-16-6 HCAPLUS

CN Disilane, 1,1,2,2-tetrachloro-1,2-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 4518-98-3
CMF C2 H6 Cl4 Si2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 123-86-4DP, Butyl acetate, reaction products with polysilanes 31324-77-3DP, Dichloromethylphenylsilane homopolymer, reaction products 31324-77-3P, Dichloromethylphenylsilane homopolymer **78433-16-6P** 122846-14-4P 185855-29-2P 849064-66-0DP, reaction products
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(silicon backbone polymers as EUV resists)

L47 ANSWER 5 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:569987 Document No. 140:207331 Synthesis and evaluation of novel organo-element resists for EUV **lithography.** Dai, Junyan; Ober, Christopher K.; Kim, Sang-Ouk; Nealey, Paul F.; Golovkina, Victoria; Shin, Jangho; Wang, Lin; Cerrina, Franco (Materials

Science and Engineering, Cornell Univ., Ithaca, NY, 14853, USA). Proceedings of SPIE-The International Society for Optical Engineering, 5039(Pt. 2, Advances in Resist Technology and Processing XX), 1164-1172 (English) 2003. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Extreme-UV (EUV) **lithog.** is to date the most promising NGL technol. for the sub-50 nm technol. node. The authors designed and synthesized several types of organoelement resists with min. oxygen content for high transparency. Either silicon or boron was incorporated in the resist structures to improve both etch resistance and transparency. In the exposure studies, it was possible to image the silicon-contg. polymers to 22.5 nm line/space patterns using EUV interferometry. A second type of EUV transparent resist platform was studied involving boron-contg. polymers. Carborane carboxylic acid was attached to a copolymer backbone to introduce boron atoms with controlled structure attachment level. In a preliminary study, these polymers could be imaged by 248 nm exposure. Effect of structure on line edge roughness is also to be included in the discussion.

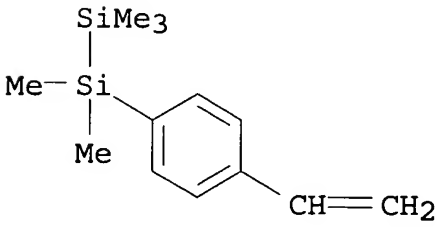
IT **662152-18-3D**, hydrolyzed
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(prepn. of silicon-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

RN 662152-18-3 HCAPLUS

CN Carbonic acid, 1,1-dimethylethyl 4-ethenylphenyl ester, polymer with (4-ethenylphenyl)pentamethyldisilane (9CI) (CA INDEX NAME)

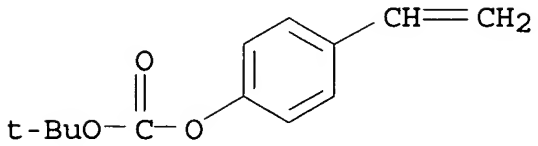
CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

CRN 87188-51-0
CMF C13 H16 O3



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST silicon boron contg polymer photoresist extreme UV **lithog**
IT Polymers, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(block; properties of boron-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Sputtering
(etching, reactive, resistance; properties of Si- and B-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Negative photoresists
(extreme-UV, chem. amplified; prepn. of boron-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Positive photoresists
(extreme-UV, chem. amplified; properties of silicon-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Sulfonium compounds
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; properties of Si- and B-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Hydroboration
(prepn. of boron-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Surface roughness
(properties of Si- and B-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)
IT Etching

(sputter, reactive, resistance; properties of Si- and B-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

IT 662152-19-4 662152-20-7 662152-21-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of boron-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

IT **662152-18-3D**, hydrolyzed
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(prepn. of silicon-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

IT 114442-01-2, 4-Pentamethyldisilylstyrene
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of silicon-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

IT 105729-79-1D, Isoprene-styrene block copolymer, hydroxylated esters with 1-carboxycarborane 105729-79-1D, Isoprene-styrene block copolymer, hydroxylated, hydroboration products 662152-19-4D, reaction product with isoprene-styrene block copolymer
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(properties of boron-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

IT 662152-17-2D, Poly(4-trimethylsilylstyrene-4-acetoxystyrene), hydrolyzed
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(properties of silicon-contg. polymer photoresists with high sensitivity and etch resistance for extreme-UV **lithog.**)

L47 ANSWER 6 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2002:799485 Document No. 139:108560 Organoelement resists for EUV **lithography.** Dai, Junyan; Ober, Christopher Kemper; Wang, Lin; Cerrina, Franco; Nealey, Paul F. (Mater. Sci. Eng., Cornell Univ., Ithaca, NY, 14853, USA). Proceedings of SPIE-The International Society for Optical Engineering, 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 1193-1202 (English) 2002. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Extreme-UV (EUV) **lithog.** is perhaps the most promising of the NGL technologies for sub-100 nm resoln. To address needs in this area, the authors designed and synthesized several types of organo-element resists using only low absorbing elements, including H, C, Si and B. One category is based on silicon-contg. block and

random polymers. They show high transparency according to theor. simulations and have high oxygen reactive ion etch resistances compared to Novolak resins. In a preliminary study, the authors were able to image these polymers to 180 nm line/space patterns using EUV exposure. A second type of EUV transparent resist platform involves boron-contg. polymers. Carborane carboxylic acid was attached to a copolymer backbone to introduce boron atoms with controlled attachment level. It was found that incorporation of a small amt. of B provides remarkably high oxygen etch resistance.

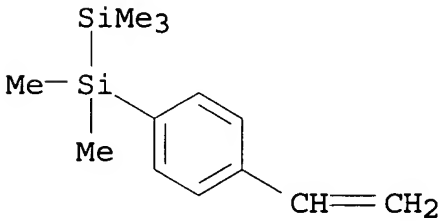
IT **122551-15-9P**, 4-Pentamethyldisilylstyrene-p-chloromethylstyrene copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)

RN 122551-15-9 HCAPLUS

CN Disilane, (4-ethenylphenyl)pentamethyl-, polymer with 1-(chloromethyl)-4-ethenylbenzene (9CI) (CA INDEX NAME)

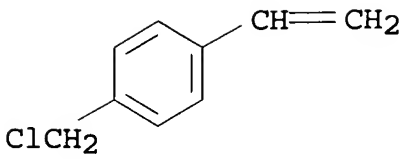
CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

CRN 1592-20-7
CMF C9 H9 Cl



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST extreme UV **lithog** photoresist silicon boron contg polymer
IT Polymers, properties
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(block; synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)
IT X-ray resists
(design and properties of silicon-contg. block and random polymers and boron-contg. polymers for oxygen etch resistant resists for extreme-UV **lithog.** in relation to)
IT Negative photoresists
(extreme-UV; design and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for oxygen etch resistant resists for extreme-UV **lithog.**)
IT Photoresists
(extreme-UV; design and properties of silicon-contg. block and random polymers and boron-contg. polymers for oxygen etch resistant resists for extreme-UV **lithog.**)
IT Optical transmission
(extreme-UV; synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)
IT Etching
(plasma, resistance; synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)
IT Hydroboration
Hydrosilylation
Polymer morphology
(synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)
IT 557099-49-7

RL: PRP (Properties)
(comparison compd.; synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)

IT 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(plasma etch; synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)

IT 557099-43-1P, Dimethylphenylvinylsilane-isoprene block copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(synthesis and etch resistance of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog** . resist application)

IT 617-86-7DP, Triethylsilane, reaction product with isoprene-styrene block copolymer 758-21-4DP, Dimethylethylsilane, reaction product with isoprene-styrene block copolymer 766-77-8DP, Dimethylphenylsilane, reaction product with isoprene-styrene block copolymer 51458-06-1DP, Dimesitylborane, reaction product with hydrolyzed isoprene-styrene block copolymer 105729-79-1DP, Isoprene-styrene block copolymer, hydrosilylation and hydroboration products **122551-15-9P**, 4-Pentamethyldisilylstyrene-p-chloromethylstyrene copolymer 557099-44-2P, p-Trimethylsilylstyrene-isoprene block copolymer 557099-45-3P, p-Trimethylsilylstyrene-p-chloromethylstyrene copolymer
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(synthesis and **lithog.** properties of silicon-contg. block and random polymers and boron-contg. polymers for extreme-UV **lithog.** resist application)

IT 1009-43-4P, p-Trimethylsilylstyrene 114442-01-2P, 4-Pentamethyldisilylstyrene
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis of silicon-contg. block and random polymers and boron-contg. polymers for resists for extreme-UV **lithog** .)

L47 ANSWER 7 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2002:799445 Document No. 139:44123 New ionic photo-acid generators (PAGs) incorporating novel perfluorinated anions. Lamanna, William M.; Kessel, Carl R.; Savu, Pat M.; Cheburkov, Yuri; Brinduse, Steve; Kestner, Thomas A.; Lillquist, Gerald J.; Parent, Mike J.; Moorhouse, Karrie S.; Zhang, Yifan; Birznieks, Grant; Kruger, Terry;

Pallazzotto, Michael C. (3M Co., St Paul, MN, USA). Proceedings of SPIE-The International Society for Optical Engineering, 4690(Pt. 2, Advances in Resist Technology and Processing XIX), 817-828 (English) 2002. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB A new class of ionic photo-acid generators (PAGs) useful in chem. amplified photoresist formulations has been developed. The new PAGs are salts comprising a photoactive cation and a fluoroorg. sulfonylimide or sulfonylmethide anion. These highly delocalized, nitrogen- and carbon-centered anions are extremely nonbasic and weakly coordinating. Correspondingly, their conjugate acids are powerful superacids. The imide and methide acids produced by photolysis of the corresponding ionic PAGs are highly active in initiating the cationic polymn. of various org. monomers (as in neg. resists) and have been shown to catalyze the deprotection of acid-sensitive org. functional groups (as in high activation energy, pos. resists) with good photospeeds. The unique balance of reactivity and phys. properties provided by the imide and methide anions suggests that they may be useful alternatives to, or replacements for, the org. or inorg. anions commonly employed in existing ionic PAG formulations (e.g., perfluoroalkanesulfonate anions and MF6- anions, where M is Sb, As or P). A family of ionic PAGs based upon these new anions and their combinations with diaryliodonium or triarylsulfonium cations has recently been made available by 3M as exptl. products for **lithog.** evaluations in pos. and neg. photoresists. In this report we will describe the characterization of these PAGs, including m.ps., thermal stabilities, UV extinction coeffs., solubilities and photo-acid volatilities. Potential advantages of these new PAGs in pos. and neg. photoresist applications will also be presented.

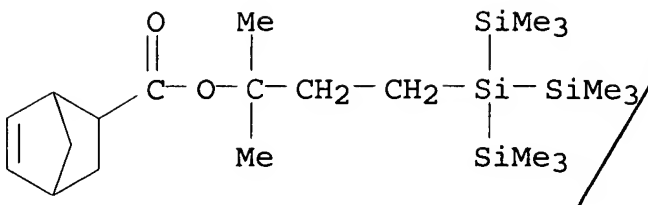
IT **263713-67-3**
RL: TEM (Technical or engineered material use); USES (Uses)
(ionic photo-acid generators (PAGs) incorporating novel perfluorinated anions)

RN 263713-67-3 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with bicyclo[2.2.1]hept-2-ene and 2,5-furandione (9CI) (CA INDEX NAME)

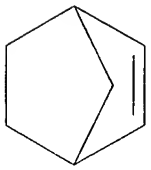
CM 1

CRN 250589-01-6
CMF C22 H46 O2 Si4



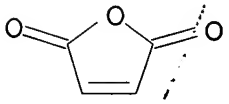
CM 2

CRN 498-66-8
CMF C7 H10



CM 3

CRN 108-31-6
CMF C4 H2 O3



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT **Photolithography**
(ionic photo-acid generators (PAGs) incorporating novel perfluorinated anions)

IT 230627-60-8 **263713-67-3** 313664-31-2 313664-32-3 313664-33-4 460731-22-0 488820-76-4 543700-95-4
RL: TEM (Technical or engineered material use); USES (Uses)
(ionic photo-acid generators (PAGs) incorporating novel perfluorinated anions)

L47 ANSWER 8 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2002:349276 Document No. 136:361833 Radiation-sensitive resist composition. Takahashi, Akira; Yasunami, Shoichiro (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002131915 A2 20020509, 45 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-327425 20001026.

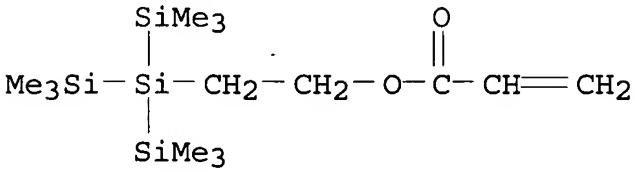
AB The compn. contains (A) a Si-contg. resin whose soly. to alk. developer changes by the action of an acid, (B) a photo-acid generator, (C) a solvent, and (D) a compd. with a N-contg. basic group and an acidic group. The compn. shows good storage stability and high resoln. and useful for **photolithog.** process in manuf. of semiconductor devices.

IT **381691-11-8 388088-23-1 388088-24-2 388088-26-4 388088-27-5**
RL: TEM (Technical or engineered material use); USES (Uses)
(radiation-sensitive resist contg. silicon-contg. polymer, acid generator, and compd. with acidic and basic groups)

RN 381691-11-8 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

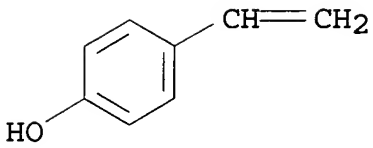
CM 1

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 2

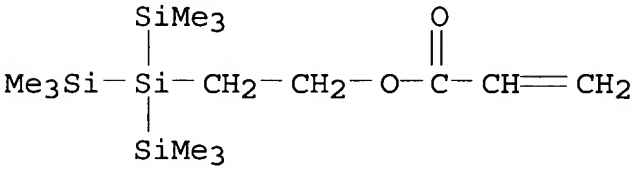
CRN 2628-17-3
CMF C8 H8 O



RN 388088-23-1 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

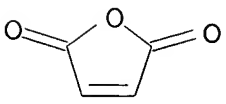
CM 1

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 2

CRN 108-31-6
CMF C4 H2 O3

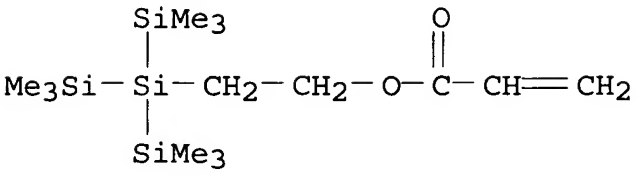


RN 388088-24-2 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

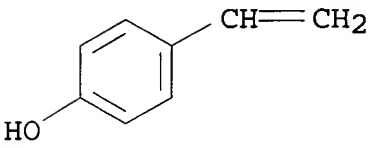
CRN 335385-69-8

CMF C14 H34 O2 Si4



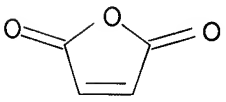
CM 2

CRN 2628-17-3
CMF C8 H8 O



CM 3

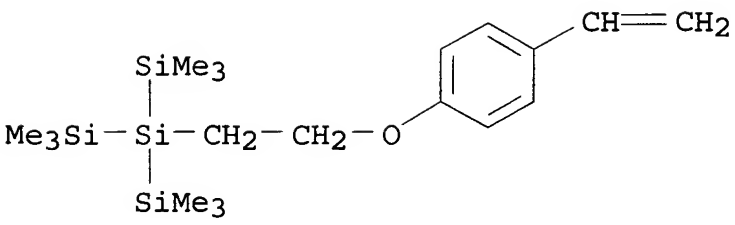
CRN 108-31-6
CMF C4 H2 O3



RN 388088-26-4 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 2-[2-(4-ethenylphenoxy)ethyl]-1,1,1,3,3,3-hexamethyl-2-(trimethylsilyl)trisilane and 2,5-furandione (9CI) (CA INDEX NAME)

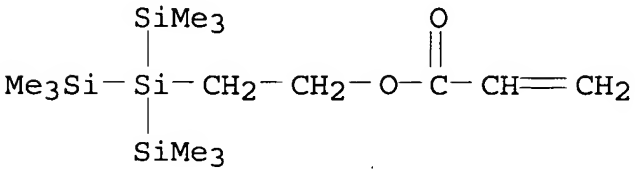
CM 1

CRN 388088-25-3
CMF C19 H38 O Si4



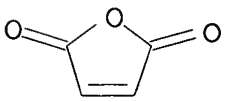
CM 2

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 3

CRN 108-31-6
CMF C4 H2 O3

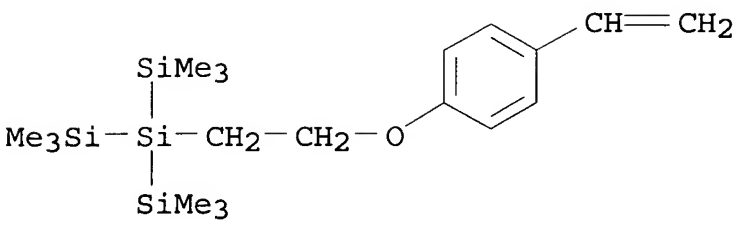


RN 388088-27-5 HCAPLUS
CN Benzoic acid, 4-ethenyl-, polymer with 2-[2-(4-ethenylphenoxy)ethyl]-1,1,1,3,3,3-hexamethyl-2-(trimethylsilyl)trisilane and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

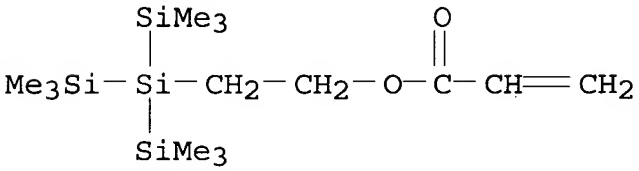
CRN 388088-25-3

CMF C19 H38 O Si4



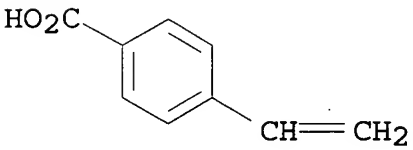
CM 2

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 3

CRN 1075-49-6
CMF C9 H8 O2



IC ICM G03F007-039
ICS C08K005-00; C08K005-16; C08L101-02; G03F007-004; G03F007-075; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76

ST radiation resist acid generator silicon polymer; acidic basic group compd radiation resist; semiconductor device fabrication **photolithog** radiation resist

IT **Photolithography**
Semiconductor device fabrication
(radiation-sensitive resist contg. silicon-contg. polymer, acid generator, and compd. with acidic and basic groups for **photolithog.**)

IT **381691-11-8** 388088-22-0 **388088-23-1**
388088-24-2 388088-26-4 388088-27-5
388088-28-6 388088-30-0 420110-05-0
RL: TEM (Technical or engineered material use); USES (Uses)
(radiation-sensitive resist contg. silicon-contg. polymer, acid generator, and compd. with acidic and basic groups)

L47 ANSWER 9 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2002:268902 Document No. 136:316920 UV-sensitive **anti-reflective** resist **layer** material containing silicon for semiconductor device fabrication and method for pattern formation using same. Hatakeyama, Jun; Kaneo, Takeshi; Hasegawa, Koji; Watanabe, Takeshi; Kubota, Toru; Kiyomori, Ayumu (Shin-Etsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002107938 A2 20020410, 20 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-300650 20000929.

AB The invention relates to an UV-sensitive **anti-reflective layer** material contg. silicon for resist pattern formation for semiconductor device fabrication, wherein the material contains a compd. having specific polysilicon substituents. The material provides the improved etching selectivity.

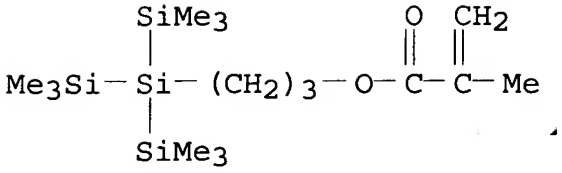
IT **410082-81-4P 410082-82-5P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(compd. having polysilicon groups in UV-sensitive **anti-reflective layer** material)

RN 410082-81-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with methyl 2-methyl-2-propenoate and 3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

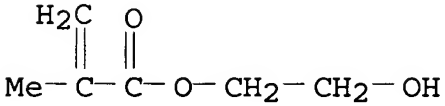
CM 1

CRN 114349-68-7
CMF C16 H38 O2 Si4



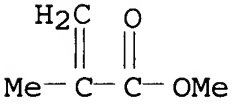
CM 2

CRN 868-77-9
CMF C6 H10 O3



CM 3

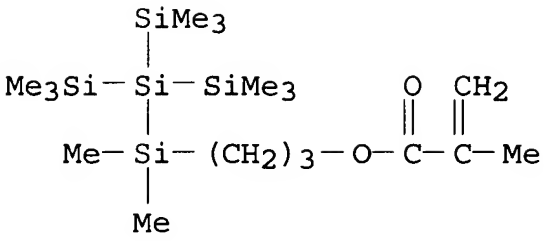
CRN 80-62-6
CMF C5 H8 O2



RN 410082-82-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with methyl 2-methyl-2-propenoate and 3-[1,1,3,3,3-pentamethyl-2,2-bis(trimethylsilyl)trisilyl]propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

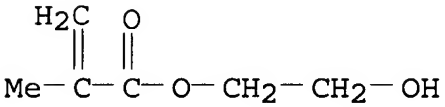
CM 1

CRN 410082-79-0
CMF C18 H44 O2 Si5



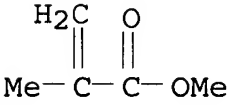
CM 2

CRN 868-77-9
CMF C6 H10 O3



CM 3

CRN 80-62-6
CMF C5 H8 O2



IC ICM G03F007-11
ICS C07F007-08; C07F007-21; C08F030-08; C08K005-00; C08L001-08; C08L003-14; C08L005-00; C08L043-04; C08L063-00; C09K003-00; G02B001-04; G02B001-11; G03F007-004; G03F007-075; G03F007-40; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST UV sensitive **antireflective** layer silicon resist semiconductor device fabrication

IT **Antireflective** films
Photoresists
(UV-sensitive **anti-reflective** resist

layer material contg. silicon for semiconductor device fabrication and method for pattern formation using same)

IT 591-87-7, Allyl acetate 920-46-7, Methacrylic acid chloride 1873-77-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(compd. having polysilicon groups in UV-sensitive **anti-reflective layer** material)

IT 114349-68-7P 405517-37-5P 410082-78-9P 410082-79-0P 410082-80-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(compd. having polysilicon groups in UV-sensitive **anti-reflective layer** material)

IT **410082-81-4P 410082-82-5P** 410082-83-6P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(compd. having polysilicon groups in UV-sensitive **anti-reflective layer** material)

L47 ANSWER 10 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

2002:72579 Document No. 136:286481 Mechanistic Studies of the Acidolysis Reactions Occurring in Silicon-Containing Bilayer Photoresists. Zharov, Ilya; Michl, Josef; Sherwood, Mark H.; Sooriyakamaran, Ratnam; Larson, C. E.; DiPietro, Richard A.; Breyta, Gregory; Wallraff, Gregory M. (Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO, 80309-0215, USA). Chemistry of Materials, 14(2), 656-663 (English) 2002. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB As the feature sizes of semiconductor devices continue to shrink, there is an increasing interest in thin film imaging approaches such as silicon-based bilayer resists. Such a resist based on a copolymer of 4-hydroxystyrene with a silicon-contg. monomer, which functions simultaneously as the acid-sensitive component and a source of O2 etch resistance have been developed. In an attempt to understand the reactions that occur in the photoresist film, the acidolysis reactions of the 2-[tris(trimethylsilyl)silyl]ethyl moiety have been studied in soln. Acid-catalyzed cleavage of the model 2-trimethylsilylethyl acetate in soln. proceeds via a nucleophilic attack on the silicon atom of the protonated acetate. Protonation of 2-[tris(trimethylsilyl)silyl]ethyl acetate is postulated to lead to a bridged siliconium cation, which reacts with nucleophiles along three pathways and yields products in which a nucleophile is attached to a silicon atom. This mechanism is consistent with the silylation of phenolic hydroxyl groups in the photoresist film consisting of a copolymer of 4-hydroxystyrene with

2-[tris(trimethylsilyl)silyl]ethyl methacrylate, obsd. during **photolithog.** processing.

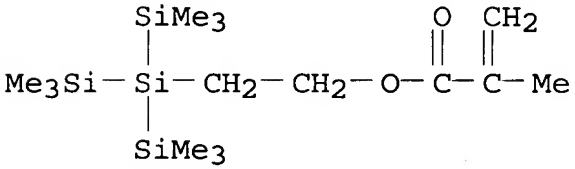
IT **211369-54-9P**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(mechanistic studies of acidolysis reactions occurring in silicon-contg. bilayer photoresists)

RN 211369-54-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

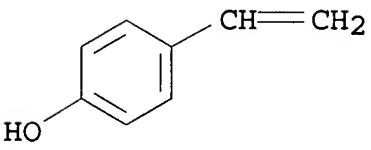
CM 1

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 2

CRN 2628-17-3
CMF C8 H8 O



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 22, 38

IT **Photolithography**
(mechanistic studies of acidolysis reactions occurring in silicon-contg. bilayer photoresists in relation to)

IT **211369-54-9P** 405517-38-6P
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(mechanistic studies of acidolysis reactions occurring in silicon-contg. bilayer photoresists)

L47 ANSWER 11 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2002:26270 Document No. 136:110118 Radiation-sensitive photoresist composition for microlithography. Takahashi, Omote; Yasunami, Shoichiro (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002006496 A2 20020109, 28 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-191529 20000626.

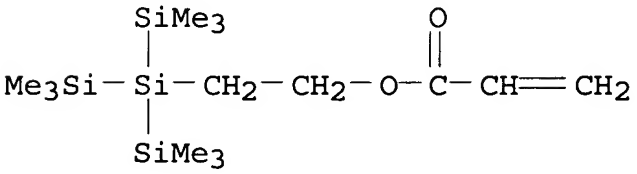
AB The title compn. contains a resin, which increases the soly. rate in an alkali soln. by reacting with an acid, a photoacid generator, a solvent, and an org. basic compd. such as amine, wherein the resin contains Si and wherein the basic compd. contains basic repeating units. The compn., which contains the resin having Si and the basic compd., provides the good pattern profile and the high resoln. pattern.

IT **381691-11-8P 388088-23-1P 388088-24-2P 388088-26-4P 388088-27-5P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resin in radiation-sensitive photoresist compn. for microlithog.)

RN 381691-11-8 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

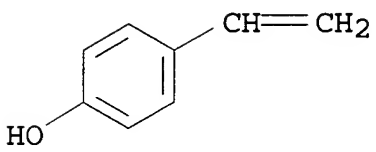
CM 1

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 2

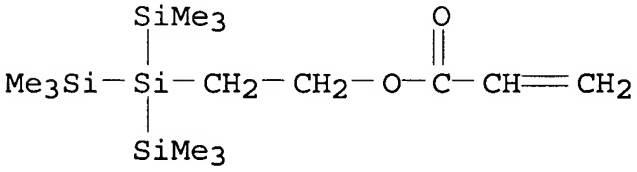
CRN 2628-17-3
CMF C8 H8 O



RN 388088-23-1 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

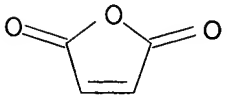
CM 1

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 2

CRN 108-31-6
CMF C4 H2 O3

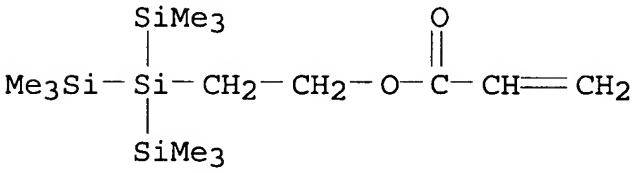


RN 388088-24-2 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with

4-ethenylphenol and 2,5-furandione (9CI) (CA INDEX NAME)

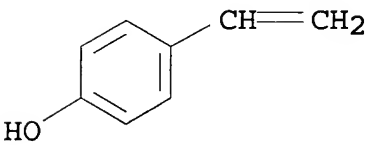
CM 1

CRN 335385-69-8
CMF C14 H34 O2 Si4



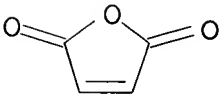
CM 2

CRN 2628-17-3
CMF C8 H8 O



CM 3

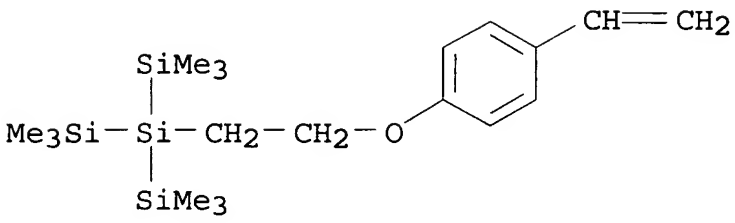
CRN 108-31-6
CMF C4 H2 O3



RN 388088-26-4 HCAPLUS
CN 2-Propenoic acid, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 2-[2-(4-ethenylphenoxy)ethyl]-1,1,1,3,3,3-hexamethyl-2-(trimethylsilyl)trisilane and 2,5-furandione (9CI) (CA INDEX NAME)

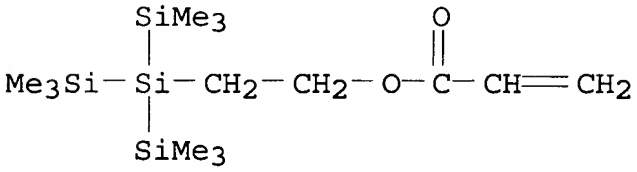
CM 1

CRN 388088-25-3
CMF C19 H38 O Si4



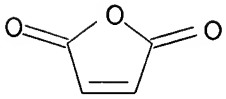
CM 2

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 3

CRN 108-31-6
CMF C4 H2 O3

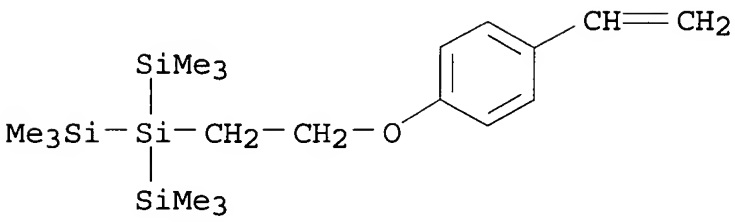


RN 388088-27-5 HCAPLUS
CN Benzoic acid, 4-ethenyl-, polymer with 2-[2-(4-ethenylphenoxy)ethyl]-1,1,1,3,3,3-hexamethyl-2-(trimethylsilyl)trisilane and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl

2-propenoate (9CI) (CA INDEX NAME)

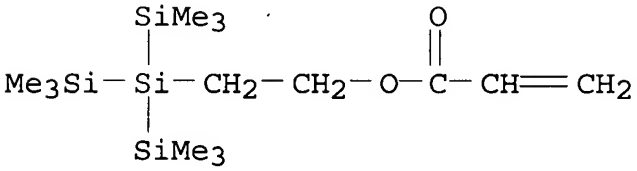
CM 1

CRN 388088-25-3
CMF C19 H38 O Si4



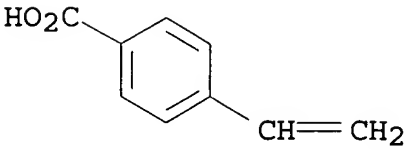
CM 2

CRN 335385-69-8
CMF C14 H34 O2 Si4



CM 3

CRN 1075-49-6
CMF C9 H8 O2



IC ICM G03F007-039

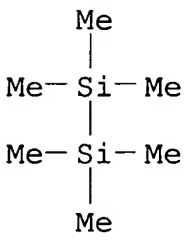
ICS G03F007-004; G03F007-075; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT Light-sensitive materials
Lithography
Photoresists
(radiation-sensitive photoresist compn. for microlithog.)
IT 314295-77-7P, Maleic anhydride-Allyltrimethylsilane-tert-Butyl acrylate-Methyl acrylate copolymer **381691-11-8P**
388088-22-0P **388088-23-1P** **388088-24-2P**
388088-26-4P **388088-27-5P** 388088-28-6P
388088-30-0P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(resin in radiation-sensitive photoresist compn. for microlithog.)

L47 ANSWER 12 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2001:652037 Document No. 136:7574 **Anti-reflective coating** for the deep coloring of PET fabrics using an atmospheric pressure plasma technique. Lee, H.-R.; Kim, D.-j.; Lee, K.-H. (Product System Lab, Institute for Advanced Engineering, Kyonggi-do, S. Korea). Surface and Coatings Technology, 142-144, 468-473 (English) 2001. CODEN: SCTEEJ. ISSN: 0257-8972. Publisher: Elsevier Science S.A..
AB To improve the deep coloring effect of polyethylene terephthalate (PET) fabrics, **anti-reflective coating layers** have been deposited on the surface of the fabrics with two different organo-silicon compds. by use of atm. pressure plasma. Also, we compared polymn. of the org. precursor with the sputter etching method for the purpose of increasing color intensity. An MF power supply, whose frequency range was 10-50 kHz, was used as a plasma source and alumina (Al2O3) plates were used as a dielec. barrier with thickness of 2.7 mm. Polymn. processes were optimized by the control of variable parameters such as treatment time, voltage, frequency and org. sources. The quality of polymd. thin film has been analyzed using SEM and FTIR. Reflectance was also measured by spectrophotometry to confirm the deep coloring effect. It was obsd. that the min. reflectance value was obtained at the polymd. film thickness of 1500-2000 Å on PET. An addn. of O2 promoted the decompn. of org. monomers and contributed to the enhancement of the color intensity on the PET surface.
IT **61469-35-0P**, Hexamethyldisilane homopolymer
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(coating material; **antireflective** coating for deep coloring of polyester fabrics using atm.-pressure plasma)
RN 61469-35-0 HCAPLUS
CN Disilane, hexamethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1450-14-2
CMF C6 H18 Si2



CC 40-6 (Textiles and Fibers)
ST **antireflective** coating polyester fabric coloring silane polymer film
IT **Antireflective** films
Coloring
Optical **reflection**
(**antireflective coating** for deep coloring of polyester fabrics using atm.-pressure plasma)
IT Polyesters, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**antireflective** coating for deep coloring of polyester fabrics using atm.-pressure plasma)
IT Polyester fibers, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(fabrics; **antireflective** coating for deep coloring of polyester fabrics using atm.-pressure plasma)
IT Polymerization
(plasma; **antireflective** coating for deep coloring of polyester fabrics using atm.-pressure plasma)
IT 25038-59-9, Polyethylene terephthalate, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**antireflective** coating for deep coloring of polyester

fabrics using atm.-pressure plasma)

IT **61469-35-0P**, Hexamethyldisilane homopolymer 169797-49-3P
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(coating material; **antireflective** coating for deep coloring of polyester fabrics using atm.-pressure plasma)

L47 ANSWER 13 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2001:355502 Document No. 135:99725 Application of Polysilanes to LSI Manufacturing Processes-Their **Antireflective** Properties and Etching Selectivity toward Resists. Hayase, S.; Nakano, Y.; Yoshikawa, S.; Ohta, H.; Sato, Y.; Shiobara, E.; Miyoshi, S.; Onishi, Y.; Abe, M.; Matsuyama, H.; Ohiwa, Y. (Research and Development Center, Toshiba Corporation, Komukai-toshiba-cho Saiwai-ku Kawasaki, 210, Japan). Chemistry of Materials, 13(6), 2186-2194 (English) 2001. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

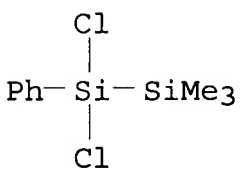
AB Fundamental aspects for a novel LSI pattern fabrication process employing polysilanes as an **antireflective** layer (ARL) are discussed. The multilayer is composed of an org. resist, a polysilane layer, and a substrate. The polysilane avoids reflections from the substrate when the resist is exposed to 248-nm light emitted from a KrF excimer laser. It also acts as a pattern transfer layer. The polysilane layer is etched faster than the resist when the etching is carried out with reactive ions by employing Cl2 gas. Therefore, the resist pattern is transferred to the polysilane layer precisely. The relationship between the structure of the polysilane and its phys. properties, namely, the UV absorbance at 248 nm and etching selectivity toward the org. resist, is discussed and the best polysilane structure for this application identified. Attention, during synthesis of polysilanes there is a danger of explosion. The reaction vessel must be maintained under inert conditions, monomers should be added slowly to the reaction mixt. under controlled conditions, care should be taken specially at the beginning of the reaction which has an induction period.

IT **349079-28-3P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysilanes and their **antireflective**- and etching properties in **photolithog.** imaging)

RN 349079-28-3 HCAPLUS
CN Disilane, 1,1-dichloro-2,2,2-trimethyl-1-phenyl-, polymer with 1,2-ethanediylbis[dichloromethylsilane] (9CI) (CA INDEX NAME)

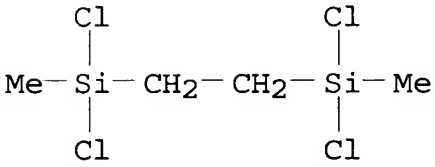
CM 1

CRN 57519-88-7
CMF C9 H14 Cl2 Si2



CM 2

CRN 3353-69-3
CMF C4 H10 Cl4 Si2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **photolithog** polysilane **antireflection** etching property safety
IT Formation enthalpy
Molecular orbital
(heat of formation of polysilanes model compds. in relation to etching behavior of polysilane **antireflective** layers in **photolithog.**)
IT Etching
(plasma, selectivity; polysilanes and their **antireflective**- and etching properties in **photolithog.** imaging)
IT **Antireflective** films
Molecular structure-property relationship
Photoresists
UV absorption
UV and visible spectra
(polysilanes and their **antireflective**- and etching

properties in **photolithog.** imaging)

IT Polysilanes
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(polysilanes and their **antireflective**- and etching properties in **photolithog.** imaging)

IT 56087-10-6 79991-69-8 349079-32-9 349079-33-0
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(MO calcns. of heat of formation of org. resist model compds. in relation to etching behavior of polysilane **antireflective** layers in **photolithog.**)

IT 5181-42-0 18026-87-4 118714-41-3 127348-36-1
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(MO calcns. of heat of formation of polysilanes model compds. in relation to etching behavior of polysilane **antireflective** layers in **photolithog.**)

IT 7782-50-5, Chlorine, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(plasma etching; polysilanes and their **antireflective**- and etching properties in **photolithog.** imaging)

IT 212334-44-6P, 1,2-Bis(dichloromethylsilyl)ethane-dichlorodiphenylsilane copolymer 349079-27-2P **349079-28-3P** 349079-30-7P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysilanes and their **antireflective**- and etching properties in **photolithog.** imaging)

IT 31324-77-3, Dichloromethylphenylsilane homopolymer 70158-17-7, Dichlorodimethylsilane-methylphenyldichlorosilane copolymer 76188-55-1, Dichloromethylphenylsilane homopolymer, sru 80731-82-4, Poly(phenylsilane) 95584-36-4, Poly(phenylsilane), sru 98387-81-6, Dichloromethylphenylsilane-dichlorodiphenylsilane copolymer
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(polysilanes and their **antireflective**- and etching properties in **photolithog.** imaging)

IT 56-23-5, Carbon tetrachloride, properties 1605-73-8, tert-Butyl radical 52168-45-3
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(product; MO calcns. of heat of formation of org. resist model compds. in relation to etching behavior of polysilane **antireflective** layers in **photolithog.**)

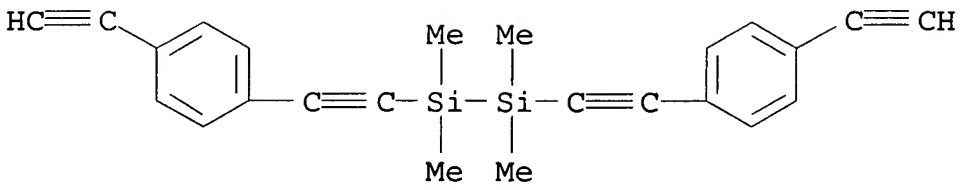
IT 2396-01-2, Phenyl 10026-04-7, Tetrachlorosilane 16571-41-8,

Trimethylsilyl 349079-31-8
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(product; MO calcns. of heat of formation of polysilanes model compds. in relation to etching behavior of polysilane **antireflective** layers in **photolithog.**)

L47 ANSWER 14 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2001:143712 Document No. 134:179709 Crosslinkable silicon polymer compositions and plasma-etchable **antireflective** films with good abrasion resistance and strength for resists. Mori, Shigeru; Hamada, Yoshitaka; Tabei, Eiichi (Shin-Etsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001055512 A2 20010227, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-231969 19990818.
AB The compns. contain (a) Si polymers (Mw 500-500,000) having Si-Si bond and ≥2 Si-H group, (b) HC.tplbond.CAC.tplbond.C(SiR1R2C.tplbond.CAC.tplbond.C)nH or (YC.tplbond.CAC.tplbond.C)3-aSi(R3)a(Q)bSi(R3)c(C.tplbond.CAC.tplbond.CY)3-c [A = (un)substituted phenylene; R1, R2 = H, alkyl, alkenyl, alkynyl, aryl, alkoxy, amino, C.tplbond.CAC.tplbond.CH; Y = H, [SiR1R2(Q)bSiR1R2C.tplbond.CAC.tplbond.C]nH; Q = O, (CH2)m, (un)substituted phenylene; R3 = H, alkyl, alkenyl, alkynyl, aryl, alkoxy; n = 1-10; m = 0-6; a, c = 0, 1, 2; b = 0, 1], and (c) hydrosilylation catalysts. Thus, a compn. contg. [(MePhSi)2(MeHSi)2(Me2Si)2]n (Mn 2470, Mw 5330) 100, (p-HC.tplbond.CC6H4C.tplbond.C)2SiPhH 20, and BTTB 25 (peroxy benzophenone) 20 parts was spin-coated and cured to give a film showing pencil hardness 5H and no soly. in toluene.
IT **326856-31-9P**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
RN 326856-31-9 HCAPLUS
CN Disilane, 1,2-bis[(4-ethynylphenyl)ethynyl]-1,1,2,2-tetramethyl-, polymer with dichlorodimethylsilane, dichloromethylphenylsilane and dichloromethylsilane (9CI) (CA INDEX NAME)

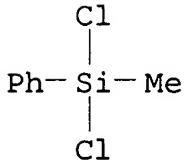
CM 1

CRN 326856-30-8
CMF C24 H22 Si2



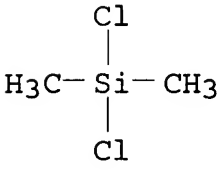
CM 2

CRN 149-74-6
CMF C7 H8 Cl2 Si



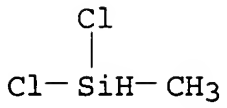
CM 3

CRN 75-78-5
CMF C2 H6 Cl2 Si



CM 4

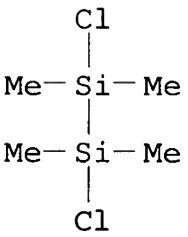
CRN 75-54-7
CMF C H4 Cl2 Si



IT **326856-50-2P**
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(oligomeric, crosslinking agent; crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
RN 326856-50-2 HCAPLUS
CN Disilane, 1,2-dichloro-1,1,2,2-tetramethyl-, polymer with 1,3-diethynylbenzene (9CI) (CA INDEX NAME)

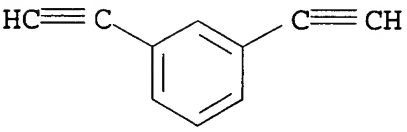
CM 1

CRN 4342-61-4
CMF C4 H12 Cl2 Si2



CM 2

CRN 1785-61-1
CMF C10 H6



IC ICM C08L083-16
ICS C08G077-60; G03F007-11; H01L021-027

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 74
ST silicon polymer plasma etchable **antireflective** film; hydrogen polysilane ethynylsilane compn **antireflective** film; resist **antireflective** film crosslinked polysilane
IT **Antireflective** films
Photoresists
(crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
IT Polysilanes
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
IT 326856-21-7P 326856-25-1P **326856-31-9P** 326856-35-3P
326856-39-7P 326856-42-2P 326859-60-3P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
IT 184287-08-9P 326856-55-7P 327596-35-0P 327596-36-1P
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(crosslinking agent; crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
IT 98-13-5, Phenyltrichlorosilane
RL: RCT (Reactant); RACT (Reactant or reagent)
(in prepn. of crosslinking agent for plasma-etchable **antireflective** polysilane films for resists)
IT 184886-16-6P 184886-21-3P 184899-03-4P, Dichlorophenylsilane-p-diethynylbenzene copolymer **326856-50-2P**
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(oligomeric, crosslinking agent; crosslinkable polysilane compns. for plasma-etchable **antireflective** films for resists)
IT 1785-61-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for crosslinking agent; in prepn. of crosslinking agent for plasma-etchable **antireflective** polysilane films for resists)

L47 ANSWER 15 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2000:806332 Document No. 134:214823 Toward controlled resist line-edge roughness: material origin of line-edge roughness in chemically amplified positive-tone resists. Lin, Qinghuang; Sooriyakumaran,

Ratnam; Huang, Wu-Song (IBM Thomas J. Watson Research Ctr., Yorktown Heights, NY, USA). Proceedings of SPIE-The International Society for Optical Engineering, 3999(Pt. 1, Advances in Resist Technology and Processing XVII), 230-239 (English) 2000. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Material origin of resist line edge roughness (LER) in pos.-tone chem. amplified resists has been investigated by designing expts. to mimic the compn. and the morphol. of the resists in the line edge regions where the resist consists of both the protected polymer and its de-protected counterparts. Blends of the protected and the de-protected base polymers for two silicon contg., pos.-tone chem. amplified resists were prepd. Morphol. and surface roughness of thin films of the polymer blends were probed with at. force microscope (AFM). AFM results clearly showed that the protected polymer and its de-protected counterparts form distinct phase sepd. morphol. after spin coating and baking. This phase sepn. leads to surface roughening of the blend films. Furthermore, the surface roughness of the blend films is enhanced after development with an aq. TMAH developer. These results suggest that the material origin of resist LER in pos.-tone chem. amplified resists stems from the compositional heterogeneity due to phase incompatibility of the protected base polymer and its de-protected counterparts in the line edge regions. The effects of blend compn., the extent of de-protection, and processing conditions on the morphol. and surface roughness will be presented. The implications of these findings for high-resoln. resist design will also be discussed.

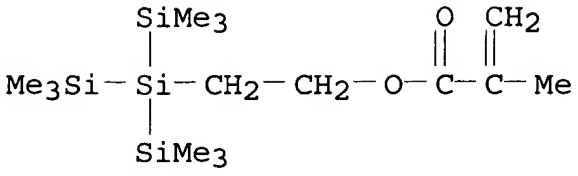
IT **211369-54-9**, p-Hydroxystyrene-tris(trimethylsilyl)silylethyl methacrylate copolymer **328248-77-7**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(material origin of pattern line edge roughness in pos.-tone chem. amplified photoresists)

RN 211369-54-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

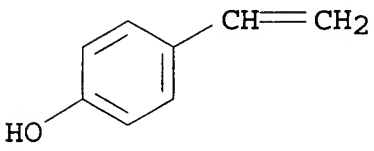
CM 1

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 2

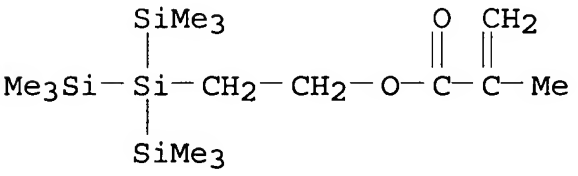
CRN 2628-17-3
CMF C8 H8 O



RN 328248-77-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 4-ethenylphenol and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

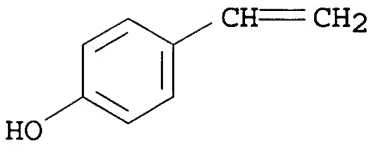
CM 1

CRN 211369-53-8
CMF C15 H36 O2 Si4



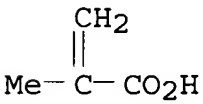
CM 2

CRN 2628-17-3
CMF C8 H8 O



CM 3

CRN 79-41-4
CMF C4 H6 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **lithog** chem amplified pos photoresist image line edge roughness
IT 110123-07-4, p-Hydroxystyrene-methacrylic acid copolymer **211369-54-9**, p-Hydroxystyrene-tris(trimethylsilyl)silylethyl methacrylate copolymer **328248-77-7**
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(material origin of pattern line edge roughness in pos.-tone chem. amplified photoresists)

L47 ANSWER 16 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
2000:610116 Document No. 133:342341 Diffusion and distribution of photoacid generators in thin polymer films. Lin, Qinghuang; Angelopoulos, Marie; Babich, Katherina; Medeiros, David; Sundararajan, Narayan; Weibel, Gina; Ober, Christopher (IBM T. J. Watson Research Center, Yorktown Heights, NY, 10598, USA). Materials Research Society Symposium Proceedings, 584(Materials Issues and Modeling for Device Nanofabrication), 155-162 (English) 2000. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.
AB Distribution and diffusion of two fluorinated ionic photoacid generators (PAGs) in thin polymer films have been investigated by depth profiling of the intrinsic label elements of both the PAGs and a silicon contg. carrier polymer with Rutherford Backscattering

Spectrometry (RBS) and dynamic Secondary Ion Mass Spectroscopy (SIMS). Distribution and diffusion of the PAGs in a bilayer film stack, which consists of a thin silicon contg. polymer film on top of a thick thermally cross-linked Novolak film on a silicon substrate, have been studied as a function of the Novolak crosslinking temp. Deposition of the PAG contg. polymer films on top of the crosslinked Novolak films by spin coating results in an interphase with enriched PAG. Subsequent annealing of the film stack caused expansion of the interphase and diffusion of the PAG into the underlying Novolak film when Novolak was crosslinked at lower temps. On the other hand, there was a uniform PAG distribution and no detectable diffusion of the PAG into Novolak when it was crosslinked at high temps. The variations in the PAG distribution and diffusion were attributed to the changes in the chem. and phys. properties of Novolak during crosslinking.

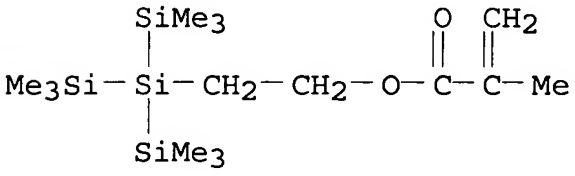
IT **211369-54-9**, p-Hydroxystyrene-tris(trimethylsilyl)silylethyl methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

RN 211369-54-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

CM 1

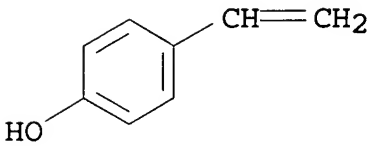
CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 2

CRN 2628-17-3

CMF C8 H8 O



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST photoacid generator fluorinated diffusion novolak tristrimethylsilylsilylethyl methacrylate bilayer photoresist; chem amplified bilayer photoresist photoacid diffusion **lithog**

IT Photoresists
(chem. amplified; distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT Diffusion
Glass transition temperature
Molecular association
(distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT Interface
(film-substrate; distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT Phenolic resins, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(novolak, substrate; distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT Polarity
(surface, substrate; distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT Crosslinking
(thermal; distribution and diffusion of photoacid generators in bilayer **lithog** system consisting of silicon-contg. polymer film over Novolak film as function of thermal crosslinking of Novolak)

IT **211369-54-9**, p-Hydroxystyrene-tris(trimethylsilyl)silylethyl

methacrylate copolymer
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT 84563-54-2, Bis(4-tert-butylphenyl)iodonium triflate 213740-80-8
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photoacid generator; distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

IT 7440-21-3, Silicon, processes 7440-44-0, Carbon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrate; distribution and diffusion of fluorinated photoacid generators in bilayer **lithog** system of silicon-contg. methacrylate polymer film over baked Novolak film)

L47 ANSWER 17 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

1999:572380 Document No. 131:358104 High-resolution 248-nm bilayer resist. Lin, Qinghuang; Petrillo, Karen E.; Babich, Katherina; LaTulipe, Douglas C.; Medeiros, David; Mahorowala, A.; Simons, John P.; Angelopoulos, Marie; Wallraff, Gregory M.; Larson, C.; Fenzel-Alexander, D.; Sooriyakumaran, R.; Breyta, G.; Brock, P.; DiPietro, R.; Hofer, D. (T.J. Watson Research Ctr., IBM, Yorktown Heights, NY, USA). Proceedings of SPIE-The International Society for Optical Engineering, 3678(Pt. 1, Advances in Resist Technology and Processing XVI), 241-250 (English) 1999. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Bilayer thin film imaging is one approach to extend 248 nm optical **lithog.** to 150 nm regime and beyond. The authors report their progress in the development of a pos.-tone bilayer resist system consisting of a thin silicon contg. imaging layer over a recently developed crosslinked polymeric underlayer. The chem. amplified imaging layer resist is based on a novel dual-functional silicon contg. monomer, tris(trimethylsilyl)silylethyl methacrylate, which in addn. to providing etch resistance, also functions as the acid sensitive functionality. **Lithog.** evaluation of the bilayer resist with a 0.63 NA and a 0.68 NA 248 nm exposure tool has demonstrated resoln. down to 125 nm equal line/space features with a dose latitude of 16% and depth of focus (DOF) of 0.6 um. The dose latitude and DOF for 150 nm equal line/space features are 22% and 1.2 um, resp. Finally, residue-free, ultra-high aspect ratio resist

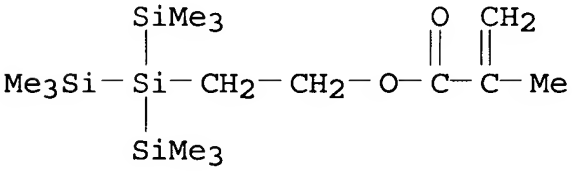
features have been obtained by O2 or O2/SO2 reactive ion etching using a high-d. plasma etch system. The resist design, deprotection chem., **lithog.** and etch characteristics of the top layer, as well as the design of the new underlay, will be discussed.

IT **211369-54-9**
RL: TEM (Technical or engineered material use); USES (Uses)
(model compd. for top layer; **lithog.** pos.-tone bilayer photoresist system consisting of thin silicon contg. polymer imaging layer over thermally crosslinked dyed phenolic polymer underlayer)

RN 211369-54-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

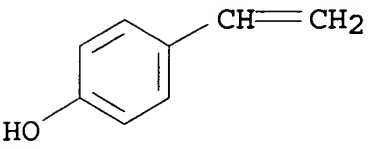
CM 1

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 2

CRN 2628-17-3
CMF C8 H8 O



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **photolithog** bilayer resist silane methacrylate copolymer top layer

IT Positive photoresists
(bilayer; **lithog.** pos.-tone bilayer photoresist system consisting of thin silicon contg. polymer imaging layer over thermally crosslinked dyed phenolic polymer underlayer)
IT Onium compounds
RL: NUU (Other use, unclassified); USES (Uses)
(iodonium, photoacid generator top layer; **lithog.** pos. bilayer photoresist consisting of thin silicon contg. polymer imaging layer over thermally crosslinked dyed phenolic polymer underlayer)
IT **211369-54-9**
RL: TEM (Technical or engineered material use); USES (Uses)
(model compd. for top layer; **lithog.** pos.-tone bilayer photoresist system consisting of thin silicon contg. polymer imaging layer over thermally crosslinked dyed phenolic polymer underlayer)
IT 7446-09-5, Sulfur dioxide, uses 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(plasma etch; **lithog.** pos.-tone bilayer photoresist system consisting of thin silicon contg. polymer imaging layer over thermally crosslinked dyed phenolic polymer underlayer)
IT 211369-53-8D, polymers
RL: TEM (Technical or engineered material use); USES (Uses)
(top imaging layer; **lithog.** pos. bilayer photoresist contg. crosslinked dyed phenolic polymer underlayer and top imaging copolymer contg. acrylate and hydroxystyrene and tris(trimethylsilyl)silylethyl methacrylate monomers)
IT 79-10-7D, Acrylic acid, esters, polymers 2628-17-3D, p-Hydroxystyrene, polymers
RL: TEM (Technical or engineered material use); USES (Uses)
(top layer; **lithog.**tone bilayer photoresist contg. thermally crosslinked dyed phenolic polymer underlayer and top imaging copolymer contg. acrylate and hydroxystyrene and tris(trimethylsilyl)silylethyl methacrylate monomers)
IT 108-95-2D, Phenol, polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(underlayer; **lithog.** pos.-tone bilayer photoresist system consisting of thin silicon contg. polymer imaging layer over thermally crosslinked dyed phenolic polymer underlayer)

L47 ANSWER 18 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1999:572377 Document No. 131:358101 Novel silicon-containing resists for EUV and 193-nm **lithography.** Kessel, Carl R.; Boardman, Larry D.; Rhyner, Steven J.; Cobb, Jonathan L.; Henderson, Craig C.; Rao, Veena; Okoroanyanwu, Uzodinma (3M Co., St. Paul, MN,

USA). Proceedings of SPIE-The International Society for Optical Engineering, 3678(Pt. 1, Advances in Resist Technology and Processing XVI), 214-220 (English) 1999. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.

AB Two families of polymers have been prepd. and evaluated as silicon-contg. bilayer resist candidates at both 193 nm and 13.4 nm (EUV). Both families of polymers are based on a tertiary ester protecting group in which the ester group contains a silicon cluster. The PRB family of polymers are random methacrylate copolymers and the PRC family are alternating maleic anhydride/norbornene polymers. The PRB family shows good resoln. and sensitivity at both 193 nm and EUV, but suffers from adhesion failure between the imaging layer and the underlayer. The PRC polymers show good adhesion to underlayers and can print features at ≤0.12 μm at 193 nm and ≤0.10 μm at 13.4 nm.

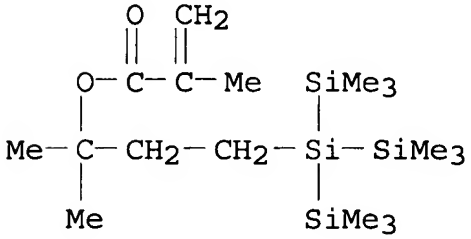
IT **250588-95-5P 250588-96-6P 250588-97-7P 250588-98-8P 250588-99-9P 250589-00-5P 250589-02-7P**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(novel silicon-contg. resists for EUV and 193-nm **lithog** .)

RN 250588-95-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with 2,5-furandione and 2-propenoic acid (9CI) (CA INDEX NAME)

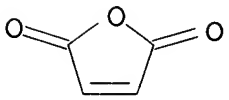
CM 1

CRN 250588-94-4
CMF C18 H42 O2 Si4



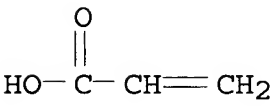
CM 2

CRN 108-31-6
CMF C4 H2 O3



CM 3

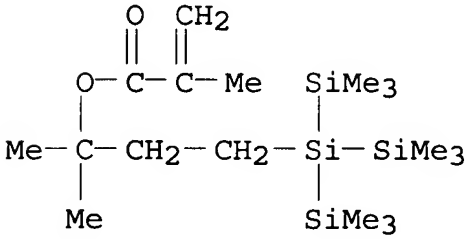
CRN 79-10-7
CMF C3 H4 O2



RN 250588-96-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with 2,5-furandione and methyl 2-propenoate (9CI) (CA INDEX NAME)

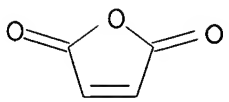
CM 1

CRN 250588-94-4
CMF C18 H42 O2 Si4



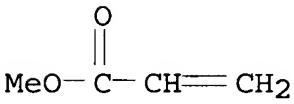
CM 2

CRN 108-31-6
CMF C4 H2 O3



CM 3

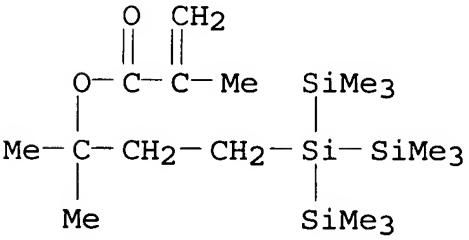
CRN 96-33-3
CMF C4 H6 O2



RN 250588-97-7 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with 1,1-dimethylethyl 2-propenoate and 2,5-furandione (9CI) (CA INDEX NAME)

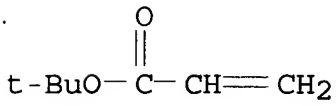
CM 1

CRN 250588-94-4
CMF C18 H42 O2 Si4



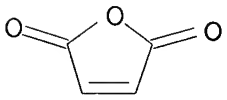
CM 2

CRN 1663-39-4
CMF C7 H12 O2



CM 3

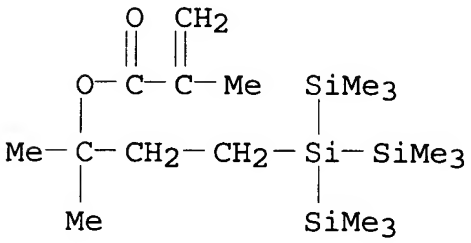
CRN 108-31-6
CMF C4 H2 O3



RN 250588-98-8 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl 2-methyl-2-propenoate and 2,5-furandione (9CI) (CA INDEX NAME)

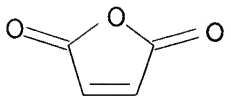
CM 1

CRN 250588-94-4
CMF C18 H42 O2 Si4



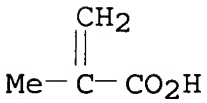
CM 2

CRN 108-31-6
CMF C4 H2 O3



CM 3

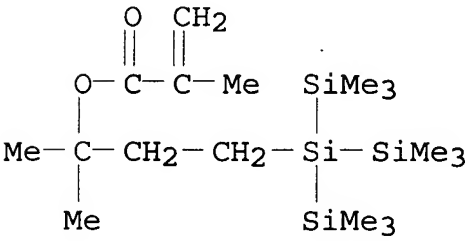
CRN 79-41-4
CMF C4 H6 O2



RN 250588-99-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with 2,5-furandione and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

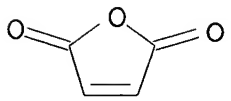
CM 1

CRN 250588-94-4
CMF C18 H42 O2 Si4



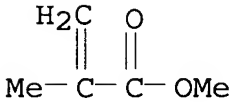
CM 2

CRN 108-31-6
CMF C4 H2 O3



CM 3

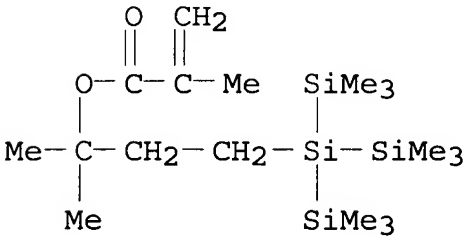
CRN 80-62-6
CMF C5 H8 O2



RN 250589-00-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl 2-methyl-2-propenoate and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

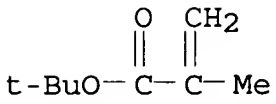
CRN 250588-94-4
CMF C18 H42 O2 Si4



CM 2

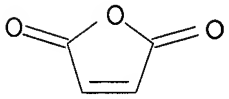
CRN 585-07-9

CMF C8 H14 O2



CM 3

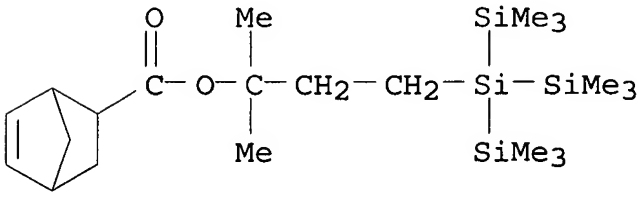
CRN 108-31-6
CMF C4 H2 O3



RN 250589-02-7 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with 2,5-furandione (9CI) (CA INDEX NAME)

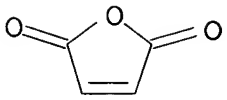
CM 1

CRN 250589-01-6
CMF C22 H46 O2 Si4



CM 2

CRN 108-31-6
CMF C4 H2 O3



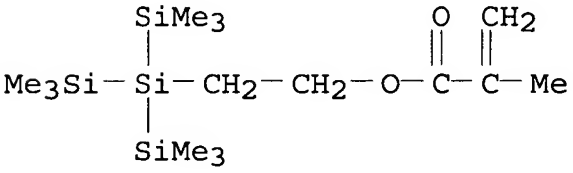
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 37
ST UV **lithog** polymer photoresist
IT **Photolithography**
Photoresists
(novel silicon-contg. resists for EUV and 193-nm **lithog**.)
IT 26678-74-0P, Norbornene-maleic anhydride copolymer
250588-95-5P 250588-96-6P 250588-97-7P
250588-98-8P 250588-99-9P 250589-00-5P
250589-02-7P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(novel silicon-contg. resists for EUV and 193-nm **lithog**.)

L47 ANSWER 19 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1998:776513 Document No. 130:146067 Positive bilayer resists for 248 and 193 nm **lithography.** Sooriyakumaran, Ratnam; Wallraff, Gregory M.; Larson, Carl E.; Fenzel-Alexander, Debra; DiPietro, Richard A.; Opitz, Juliann; Hofer, Donald C.; LaTulipe, Douglas C., Jr.; Simons, John P.; Petrillo, Karen E.; Babich, Katherina; Angelopoulos, Marie; Lin, Qinghuang; Katnani, Ahmad D. (IBM Almaden Research Center, San Jose, CA, 95120, USA). Proceedings of SPIE-The International Society for Optical Engineering, 3333(Pt. 1, Advances in Resist Technology and Processing XV), 219-227 (English) 1998. CODEN: PSISDG. ISSN: 0277-786X. Publisher: SPIE-The International Society for Optical Engineering.
AB We have designed and developed new silicon contg. methacrylate monomers that can be used in bilayer resist systems. New monomers were developed because the com. available silicon monomers were found to be unsuitable for our applications. During the course of the investigation we detd. that these monomers were acid labile. We have developed a high resoln. DUV bilayer resist system based on these monomers. Although most of our work was concd. on 248 nm **lithog.**, we have demonstrated that this chem. can be extended to 193 nm applications.

IT **211369-54-9P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos. bilayer resists for 248 and 193 nm **lithog.**)
RN 211369-54-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

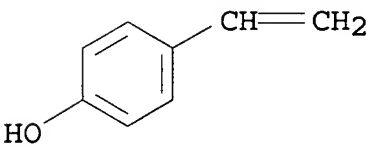
CM 1

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 2

CRN 2628-17-3
CMF C8 H8 O



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST bilayer resist **lithog** silicon **photolithog** photoresist
IT Photoresists
Resists
(pos. bilayer resists for 248 and 193 nm **lithog.**)
IT **Lithography**
Photolithography
(submicron; pos. bilayer resists for 248 and 193 nm

lithog.)

IT 79-41-4DP, Methacrylic acid, polymer with Me methacrylate and silicon contg. methacrylate 80-62-6DP, Methyl methacrylate, polymer with methacrylic acid and silicon contg. methacrylate 95049-21-1DP, polymer with methacrylates 211369-53-8P **211369-54-9P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos. bilayer resists for 248 and 193 nm **lithog.**)

IT 64-19-7, Acetic acid, formation (nonpreparative) 74-85-1, Ethylene, formation (nonpreparative) 107-46-0, Hexamethyldisiloxane 128648-08-8
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(reaction product study of pos. bilayer resists for 248 and 193 nm **lithog.**)

IT 1493-13-6, Triflic acid 16046-10-9, 2-Trimethylsilylethyl acetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction product study of pos. bilayer resists for 248 and 193 nm **lithog.**)

L47 ANSWER 20 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1998:476321 Document No. 129:181994 Etch selectivity of 4SiMA:hydroxystyrene based copolymers. Silicon chemistry for bilayer resist systems. Wallraff, G. M.; Larson, C. E.; Sooriyakumaran, R.; Oppitz, J.; Fenzel-Alexander, D.; DiPietro, R.; Hofer, D.; Breyta, G.; Sherwood, M.; Muete, J.; Lin, Q.; LaTulip, D.; Simons, J.; Babich, K.; Petrillo, K.; Angelopoulos, M. (IBM Almaden Res. Cent., San Jose, CA, 95120, USA). Journal of Photopolymer Science and Technology, 11(4), 673-680 (English) 1998. CODEN: JSTEEW. ISSN: 0914-9244. Publisher: Technical Association of Photopolymers, Japan.

AB Thin film imaging resists (TSI and Bilayer systems) confine the imaging to a thin resist film (in the case of a bilayer system) which is subsequently transferred to a thicker polymeric underlayer. This approach has a no. of potential advantages including increased ability to print high aspect ratios at small feature sizes, better resoln. at a given depth of focus (DOF), and minimization of resist substrate interactions including resist "footing," standing over wave formation and reflective notching caused by topog. Continued progress in single layer resist technol. has been able to meet the current manufg. requirements and the more complex TSI approaches have not yet been required. However, the requirements for imaging features below below 0.18 μ, the desire to extend high NA 248 nm exposure technol. and anticipated shift to 193 nm exposure tools has led to renewed interest in thin film imaging approaches. In this

report we will describe new chem. developed for bi layer resist systems for use at 248 nm in both pos. and neg. tone.

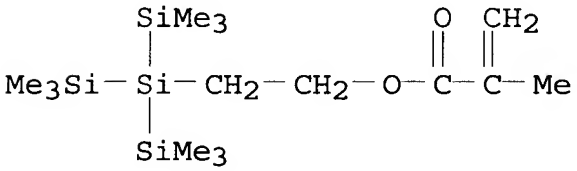
IT **211369-54-9P**
RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(etch selectivity of 4SiMA:hydroxystyrene based copolymers)

RN 211369-54-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl ester, polymer with 4-ethenylphenol (9CI) (CA INDEX NAME)

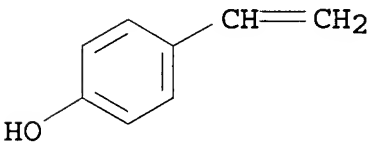
CM 1

CRN 211369-53-8
CMF C15 H36 O2 Si4



CM 2

CRN 2628-17-3
CMF C8 H8 O



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT **Photolithography**
(submicron; etch selectivity of 4SiMA:hydroxystyrene based copolymers)

IT 188557-77-9P, p-Hydroxybenzylsilanetriol homopolymer 188629-68-7P, p-Hydroxybenzylsilanetriol homopolymer, ladder sru

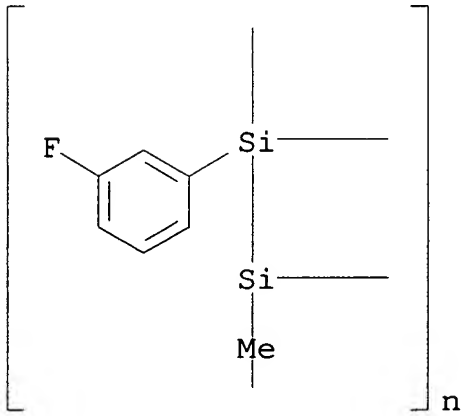
211369-54-9P
RL: PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(etch selectivity of 4SiMA:hydroxystyrene based copolymers)

L47 ANSWER 21 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1996:733517 Document No. 125:342989 **Lithographic** printing original plate having polysilane photosensitive layer for printing plate. Yokoyama, Masaaki; Ogawa, Tadashi; Enokida, Toshio (Toyo Ink Mfg Co, Japan). Jpn. Kokai Tokkyo Koho JP 08227157 A2 19960903 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-33402 19950222.

AB The original plate has a photosensitive layer comprising an org. polysilane having F-contg. hydrocarbyl groups. The printing plate is obtained by irradiating the photosensitive layer of the original plate and a film with light for photolysis of the polysilane and removing the irradiated part with a solvent. The plate showed good smudge resistance and high ink-receiving property.

IT **183909-41-3**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**lithog.** printing original plate having fluorine-contg. polysilane photosensitive layer)

RN 183909-41-3 HCAPLUS
CN Poly[1-(3-fluorophenyl)-2-methyl-1,2:1,2-disilanediylidene] (9CI) (CA INDEX NAME)



IC ICM G03F007-075
ICS G03F007-00; G03F007-039

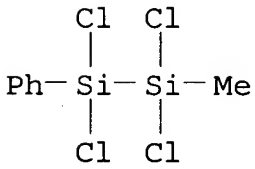
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
ST fluoro polysilane photosensitive layer **lithog** plate
IT **Lithographic** plates
Photolysis
(**lithog.** printing original plate having fluorine-contg. polysilane photosensitive layer)
IT Polysilanes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**lithog.** printing original plate having fluorine-contg. polysilane photosensitive layer)
IT 149643-46-9, Poly[phenyl(trifluoromethyl)silylene] 169116-96-5 183673-39-4, Poly[methyl(trifluoromethoxy)silylene] 183673-43-0 183790-11-6 183790-15-0 183790-17-2, Poly[bis(3-fluorophenyl)silylene] 183790-21-8 183790-23-0 183790-26-3 183790-29-6 183790-31-0 183790-37-6 183790-39-8 183790-43-4 **183909-41-3**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**lithog.** printing original plate having fluorine-contg. polysilane photosensitive layer)

L47 ANSWER 22 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1996:733516 Document No. 125:342988 Polysilane material for **lithographic** printing original plate and manufacture of printing plate using it. Yokoyama, Masaaki; Ogawa, Tadashi; Enokida, Toshio (Toyo Ink Mfg Co, Japan). Jpn. Kokai Tokkyo Koho JP 08227156 A2 19960903 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-33401 19950222.
AB The original plate has a photosensitive layer comprising an org. polysilane. The printing plate is manufd. by irradiating the photosensitive layer of the original plate and a film with light, hydrolyzing the irradiated part of the photosensitive layer, crosslinking, and removing the non-irradiated part with a solvent. The plate showed good smudge resistance and high ink-receiving property.
IT **178411-35-3 183788-81-0**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of **lithog.** printing plate having crosslinked polysilane photosensitive layer with good smudge resistance)
RN 178411-35-3 HCAPLUS
CN Disilane, 1,1,2,2-tetrachloro-1-methyl-2-phenyl-, homopolymer (9CI)

(CA INDEX NAME)

CM 1

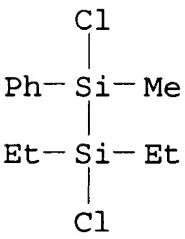
CRN 178411-34-2
CMF C7 H8 Cl4 Si2



RN 183788-81-0 HCAPLUS
CN Disilane, 1,2-dichloro-1,1-diethyl-2-methyl-2-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 183788-80-9
CMF C11 H18 Cl2 Si2



IC ICM G03F007-075
ICS G03F007-00; G03F007-38
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
ST polysilane photosensitive layer **lithog** printing plate; alkoxide crosslinking agent polysilane **lithog** plate
IT **Lithographic** plates
(manuf. of **lithog.** printing plate having crosslinked polysilane photosensitive layer with good smudge resistance)
IT Polysilanes

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of **lithog.** printing plate having crosslinked polysilane photosensitive layer with good smudge resistance)

IT Crosslinking
(photochem., manuf. of **lithog.** printing plate having crosslinked polysilane photosensitive layer with good smudge resistance)

IT 78-10-4 546-68-9, Tetraisopropoxytitanium 555-75-9, Triethoxyaluminum 3087-36-3, Tetraethoxytitanium
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(manuf. of **lithog.** printing plate having crosslinked polysilane photosensitive layer with good smudge resistance)

IT 28883-63-8, Dichlorodimethylsilane homopolymer, sru 29386-52-5, Dichlorodiphenylsilane homopolymer 30107-43-8, Dichlorodimethylsilane homopolymer 31324-77-3, Dichloromethylphenylsilane homopolymer 51176-28-4, Dichlorodiphenylsilane homopolymer, sru 70158-17-7, Dichlorodimethylsilane-dichloromethylphenylsilane copolymer 76188-55-1, Dichloromethylphenylsilane homopolymer, sru 133842-74-7 148276-24-8 **178411-35-3 183788-81-0** 183788-82-1 183788-85-4 183788-87-6 183788-88-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of **lithog.** printing plate having crosslinked polysilane photosensitive layer with good smudge resistance)

L47 ANSWER 23 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1995:745292 Document No. 123:270528 Chain transfer as a method for modification of PMMA-based resists. Bulgakova, S. A.; Semchikov, Yu. D.; Semenov, V. V.; Novozhilov, A. V.; Korsakov, V. S.; Maksimov, S. I. (Lobachevskii State Univ., Res. Inst. Chem., Novgorod, 603600, Russia). Vysokomolekulyarnye Soedineniya, Seriya A i Seriya B, 37(4), 706-8 (Russian) 1995. CODEN: VSSBEE. Publisher: MAIK Nauka.

AB A method is proposed to enhance sensitivity of PMMA resist to electron beam and synchrotron x-rays. The method is based on the chain transfer reactions to disilanes in the course of polymer synthesis.

IT **169474-44-6P 169474-48-0P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chain transfer with disilanes as method for modification of PMMA-based resists for increased sensitivity to electron beam and

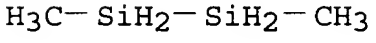
synchrotron x-rays)

RN 169474-44-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, telomer with 1,2-dimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 870-26-8
CMF C2 H10 Si2

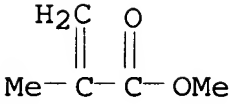


CM 2

CRN 9011-14-7
CMF (C5 H8 O2)x
CCI PMS

CM 3

CRN 80-62-6
CMF C5 H8 O2

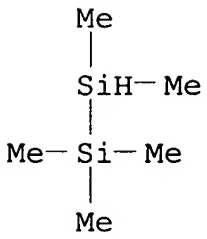


RN 169474-48-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, telomer with pentamethyldisilane (9CI) (CA INDEX NAME)

CM 1

CRN 812-15-7
CMF C5 H16 Si2

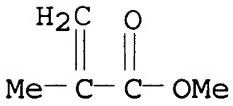


CM 2

CRN 9011-14-7
CMF (C5 H8 O2)x
CCI PMS

CM 3

CRN 80-62-6
CMF C5 H8 O2



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **lithog** resist PMMA disilane chain transfer
IT 80-62-6DP, telomers with disilanes 812-15-7DP, telomers with Me methacrylate 870-26-8DP, 1,2-Dimethyldisilane, telomers with Me methacrylate 4364-07-2DP, telomers with Me methacrylate 128534-97-4DP, telomers with Me methacrylate 130446-28-5DP, telomers with Me methacrylate 137938-35-3DP, telomers with Me methacrylate **169474-44-6P** 169474-45-7P 169474-46-8P 169474-47-9P **169474-48-0P**
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(chain transfer with disilanes as method for modification of PMMA-based resists for increased sensitivity to electron beam and synchrotron x-rays)

L47 ANSWER 24 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN

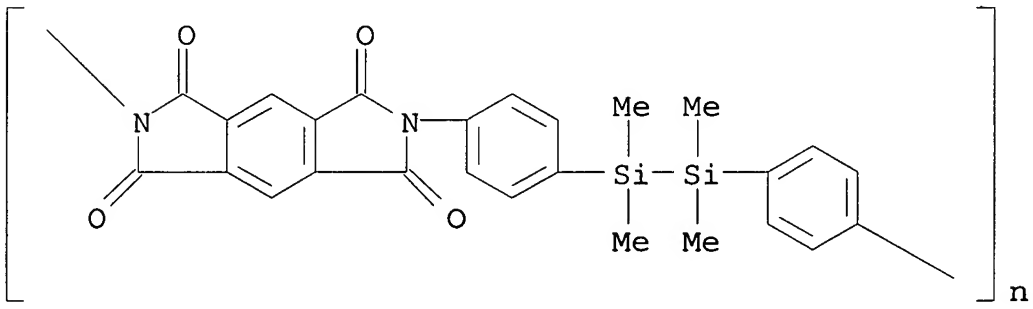
1995:394827 Document No. 122:147333 Photoresist for fine patterning. Takemoto, Kazunari; Amatatsu, Atsushi; Hiraiwa, Tomoko; Saito, Harunobu (Hitachi Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 06264267 A2 19940920 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-50783 19930311.

AB In patterning a thin film deposited on an irregular substrate by forming a resist pattern via vapor-deposition polymn. and etching the thin film, the resist pattern is obtained with polyimide or polyamic acid obtained from bis(4-aminophenyl)tetramethyldisilane and an acid anhydride. Optionally, the above thin film is a laminate with a carbon film and a metal film. High-precision patterning is achieved by depositing a uniform resist film on an irregular substrate surface to achieve high sensitivity.

IT **131483-12-0P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(for fine patterning)

RN 131483-12-0 HCAPLUS

CN Poly[(5,7-dihydro-1,3,5,7-tetraoxobenzo[1,2-c:4,5-c']dipyrrole-2,6(1H,3H)-diyl)-1,4-phenylene(1,1,2,2-tetramethyl-1,2-disilanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



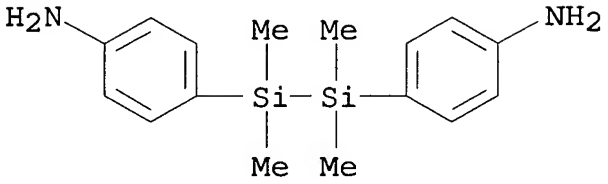
IT **131482-99-0P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(photoresist; for fine patterning)

RN 131482-99-0 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 4,4'-(1,1,2,2-tetramethyl-1,2-disilanediyl)bis[benzenamine] (9CI) (CA INDEX NAME)

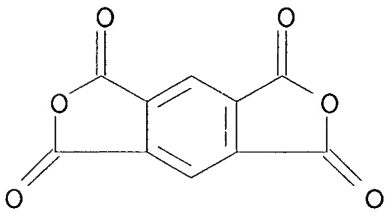
CM 1

CRN 126390-65-6
CMF C16 H24 N2 Si2



CM 2

CRN 89-32-7
CMF C10 H2 O6

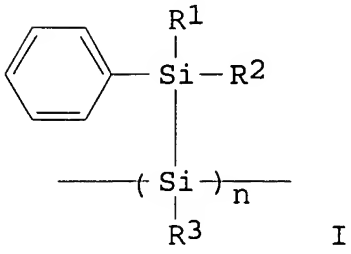


IC ICM C23F001-00
ICS C08J007-00; C23F004-00; G03F007-038; G03F007-075
ICA C08G073-10
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
ST patterning photoresist device fabrication; **photolithog** fine patterning
IT **131483-12-0P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(for fine patterning)
IT **131482-99-0P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(photoresist; for fine patterning)

L47 ANSWER 25 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1994:545371 Document No. 121:145371 Patterning method for

lithography. Abe, Naomichi (Fujitsu Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 05257288 A2 19931008 Heisei, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-53012 19920312.

GI



I

AB The title patterning method comprises coating a substrate with a polysilane I (R1-3 = alkyl; n = pos. integer), and then a photoresist, exposing the photoresist layer to light of ≤250 nm, and developing to form a resist pattern. High resoln. **lithog.** is achieved.

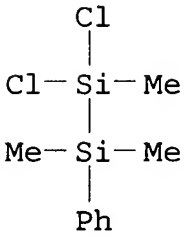
IT **114994-60-4**
RL: USES (Uses)
(subbing layer from, for photoresist patterning)

RN 114994-60-4 HCAPLUS

CN Disilane, 1,1-dichloro-1,2,2-trimethyl-2-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

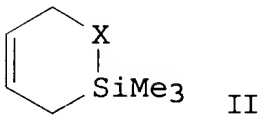
CRN 114994-59-1
CMF C9 H14 Cl2 Si2



IC ICM G03F007-075

ICS G03F007-11; G03F007-40; H01L021-027; H01L021-302
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST polysilane photoresist patterning method **lithog**
IT **Lithography**
(high resoln., patterning method for)
IT **114994-60-4** 114994-74-0
RL: USES (Uses)
(subbing layer from, for photoresist patterning)

L47 ANSWER 26 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1991:593971 Document No. 115:193971 Synthesis and **lithographic** evaluation of alternating copolymers of linear and cyclic alkenyl(di)silanes with sulfur dioxide. Gozdz, Antoni S.; Shelburne, John A., III (Bellcore, Red Bank, NJ, 07701, USA). Proceedings of SPIE-The International Society for Optical Engineering, 1466(Adv. Resist Technol. Process. 8), 520-7 (English) 1991. CODEN: PSISDG. ISSN: 0277-786X.
GI



II

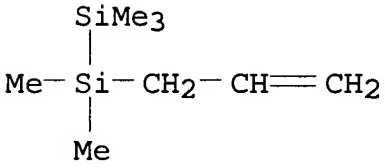
AB Free-radical alternating copolymn. of a series of acyclic and cyclic alkenyl(di)silanes with sulfur dioxide has been investigated with a view toward the prepn. of new sensitive electron-beam resists stable in oxygen plasmas. The acyclic ω-alkenylpentamethyldisilanes studied in this work are H2C=CH-(CH2)n-SiMe3-X-SiMe3 (I) where X = bond, n = 1 - 4; X = O, n = 3; X =CH2, n = 3; the cyclic alkenyl(di)silanes are (II, where X = bond; -SiMe2-; or -O-SiMe2-). High mol. wt. sol. copolymers were obtained. Thermal and oxygen plasma stability data and soly. characteristics indicate that among the copolymers studied, sulfone polymer of I (X = bond, n = 2) exhibits an optimum combination of properties for **lithog.** applications. This was confirmed by **lithog.** tests in which grating structures having a pitch of <250 nm were fabricated using this copolymer as a sensitive, oxygen plasma stable e-beam resist.
IT **134900-68-8P 134900-69-9P 134900-71-3P**
134900-73-5P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and testing of, as electron-beam resist)

RN 134900-68-8 HCAPLUS
CN Disilane, pentamethyl-2-propenyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

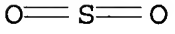
CM 1

CRN 18291-16-2
CMF C8 H20 Si2



CM 2

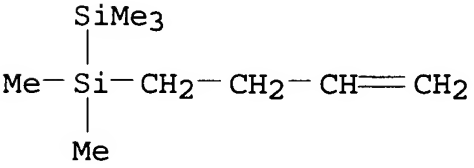
CRN 7446-09-5
CMF O2 S



RN 134900-69-9 HCAPLUS
CN Disilane, 3-butenylpentamethyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

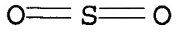
CM 1

CRN 17891-68-8
CMF C9 H22 Si2



CM 2

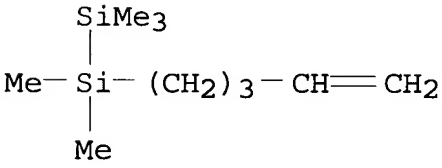
CRN 7446-09-5
CMF O2 S



RN 134900-71-3 HCAPLUS
CN Disilane, pentamethyl-4-pentenyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

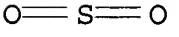
CM 1

CRN 134900-70-2
CMF C10 H24 Si2



CM 2

CRN 7446-09-5
CMF O2 S

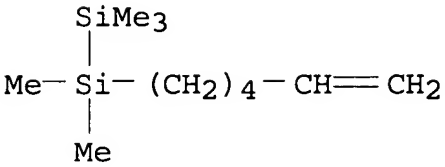


RN 134900-73-5 HCAPLUS
CN Disilane, 5-hexenylpentamethyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

CM 1

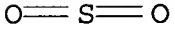
CRN 134900-72-4

CMF C11 H26 Si2



CM 2

CRN 7446-09-5
CMF O2 S



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35

IT 134900-65-5P 134900-67-7P **134900-68-8P**
134900-69-9P 134900-71-3P 134900-73-5P
134900-74-6P 134900-75-7P 134900-76-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and testing of, as electron-beam resist)

L47 ANSWER 27 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1991:546437 Document No. 115:146437 Evaluation of poly(p-trimethylsilylstyrene sulfone) and poly(p-pentamethyldisilylstyrene sulfone) as high-resolution electron-beam resists. Gozdz, Antoni S.; Ono, Hiroshi; Ito, Seiki; Shelburne, John A., III; Matsuda, Minoru (Bellcore, Red Bank, NJ, 07701, USA). Proceedings of SPIE-The International Society for Optical Engineering, 1466(Adv. Resist Technol. Process. 8), 200-5 (English) 1991. CODEN: PSISDG. ISSN: 0277-786X.

AB Sol. 1:1 alternating copolymers of poly(p-trimethylsilylstyrene sulfone) (I) and poly(p-pentamethyldisilylstyrene sulfone) were synthesized by free-radical copolymn. at T < -50°. Both copolymers had very high mol. wts. and exhibited good film-forming properties. Their thermal stability in N (5% wt loss) was ca. 210-230°. The etch rate under O2 RIE conditions (15 millitorr O2, -400 V) was 3.4 and 2.5 nm/min, and their electron

beam sensitivity was 3 and 6 μC/cm2 at 20 and 50 kV, resp., using a 40/60 vol./vol. toluene/2-propanol soln. as the developer; 200-nm-pitch gratings for advanced optoelectronic devices were fabricated in various planarizing materials and InP using I as a top imaging layer.

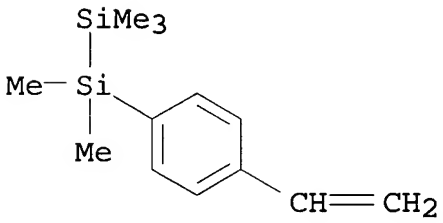
IT **123361-83-1**, Poly(p-pentamethyldisilylstyrene sulfone)
RL: USES (Uses)
(electron-beam resist from, for submicron **lithog.**)

RN 123361-83-1 HCAPLUS

CN Disilane, (4-ethenylphenyl)pentamethyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

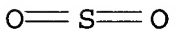
CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

CRN 7446-09-5
CMF O2 S



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT Resists
(electron-beam, poly(trimethylsilylstyrene sulfone) and poly(pentamethyldisilylstyrene sulfone) as, for high-resoln. submicron **lithog.**)

IT 113032-02-3, Poly(p-trimethylsilylstyrene sulfone)
123361-83-1, Poly(p-pentamethyldisilylstyrene sulfone)

RL: USES (Uses)
(electron-beam resist from, for submicron **lithog.**)

L47 ANSWER 28 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1991:460647 Document No. 115:60647 **Lithographic** properties of alternating copolymers of linear and cyclic alkenyldisilanes and silylated styrenes with sulfur dioxide. Gozdz, A. S.; Shelburne, J. S.; Bowden, M. J.; Ito, S.; Matsuda, M. (Bellcore, Red Bank, NJ, 07701, USA). Polymeric Materials Science and Engineering, 64, 23-4 (English) 1991. CODEN: PMSEDG. ISSN: 0743-0515.

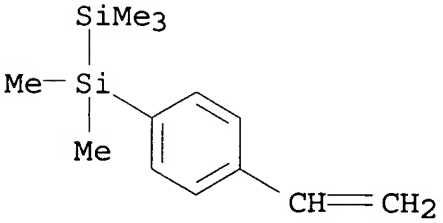
AB In an effort to improve the processing characteristics of Si contg. polymers, several resists were prepd. by radical alternating copolymn. of both linear and cyclic alkenyl(di)silanes with sulfur dioxide. Results are presented on the effect of increasing the Si content in the side-chain on the soly. characteristics to permit greater flexibility in choice of developer and eliminate the need for an initial surface passivation.

IT **123361-83-1 134900-68-8 134900-69-9 134900-71-3 134900-73-5**
RL: USES (Uses)
(soly. characteristics of, as **lithog.** resist material)

RN 123361-83-1 HCAPLUS
CN Disilane, (4-ethenylphenyl)pentamethyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

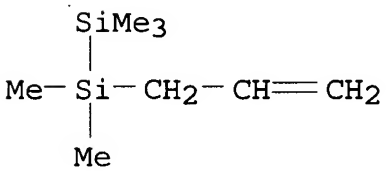
CRN 7446-09-5
CMF O2 S

O=S=O

RN 134900-68-8 HCAPLUS
CN Disilane, pentamethyl-2-propenyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

CM 1

CRN 18291-16-2
CMF C8 H20 Si2



CM 2

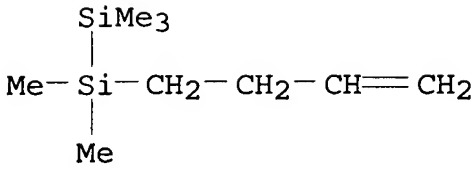
CRN 7446-09-5
CMF O2 S

O=S=O

RN 134900-69-9 HCAPLUS
CN Disilane, 3-butenylpentamethyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

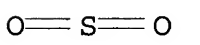
CM 1

CRN 17891-68-8
CMF C9 H22 Si2



CM 2

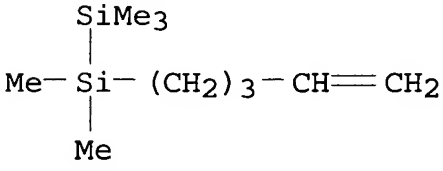
CRN 7446-09-5
CMF O2 S



RN 134900-71-3 HCAPLUS
CN Disilane, pentamethyl-4-pentenyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

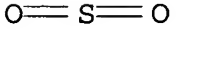
CM 1

CRN 134900-70-2
CMF C10 H24 Si2



CM 2

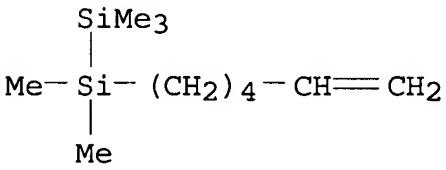
CRN 7446-09-5
CMF O2 S



RN 134900-73-5 HCAPLUS
CN Disilane, 5-hexenylpentamethyl-, polymer with sulfur dioxide (9CI) (CA INDEX NAME)

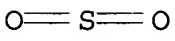
CM 1

CRN 134900-72-4
CMF C11 H26 Si2



CM 2

CRN 7446-09-5
CMF O2 S



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **lithog** alkenyldisilane sulfur dioxide polymer; resist alkenyldisilane sulfur dioxide polymer
IT 113032-02-3 **123361-83-1** 134900-65-5 134900-67-7 **134900-68-8 134900-69-9 134900-71-3** **134900-73-5** 134900-74-6 134900-75-7 134900-76-8
RL: USES (Uses)
(soly. characteristics of, as **lithog.** resist material)

L47 ANSWER 29 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1991:174819 Document No. 114:174819 Fine patterns of positive-working resists using a polyimide Langmuir-Blodgett film system. Iwamoto, Mitsumasa; Kasahara, Shigeo; Iriyama, Keiji; Nishikata, Yasunari; Kakimoto, Masaaki; Imai, Yoshio (Dep. Electr. Eng., Tokyo Inst. Technol., Tokyo, 152, Japan). Japanese Journal of Applied Physics, Part 2: Letters, 30(2A), L218-L221 (English) 1991. CODEN: JAPLD8. ISSN: 0021-4922.

AB Thermally stable multilayer films of polyimide contg. photosensitive disilane unit were prepd. and used for KrF excimer laser **lithog.** The multilayer films prepd. by the Langmuir-Blodgett technique acted as pos. working resists with a resoln. of 0.25 μm lines and spaces.

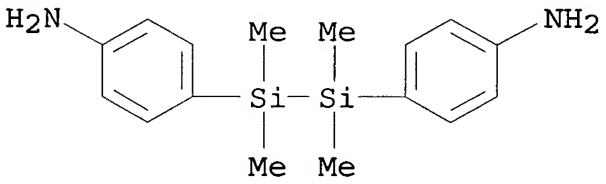
IT **131482-99-0P 131483-12-0P**
RL: PREP (Preparation)
(prepn. and **lithog.** characterization of Langmuir-Blodgett film system of, for photoresists applications)

RN 131482-99-0 HCAPLUS

CN 1H,3H-Benzo[1,2-c:4,5-c']difuran-1,3,5,7-tetrone, polymer with 4,4'-(1,1,2,2-tetramethyl-1,2-disilanediyl)bis[benzenamine] (9CI) (CA INDEX NAME)

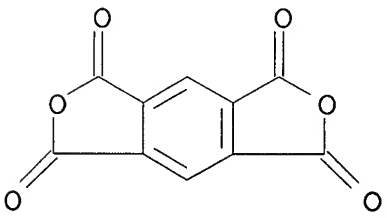
CM 1

CRN 126390-65-6
CMF C16 H24 N2 Si2



CM 2

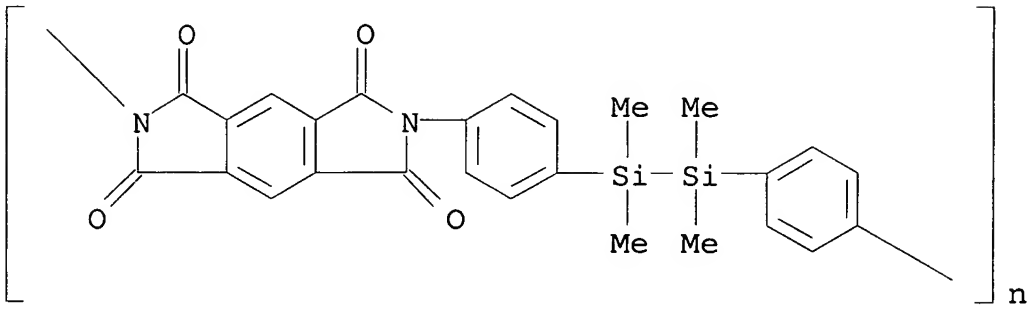
CRN 89-32-7
CMF C10 H2 O6



RN 131483-12-0 HCAPLUS

CN Poly[(5,7-dihydro-1,3,5,7-tetraoxobenzo[1,2-c:4,5-c']dipyrrole-2,6(1H,3H)-diyl)-1,4-phenylene(1,1,2,2-tetramethyl-1,2-disilanediyl)-

1,4-phenylene] (9CI) (CA INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST Langmuir Blodgett polyimide film pos photoresist; disilane polyimide Langmuir Blodgett **lithog** photoresist; **lithog** excimer laser Langmuir Blodgett resist; deep UV **lithog** photoresist multilayer polyimide

IT Polyimides, properties
RL: PRP (Properties)
(disilane-units contg., Langmuir-Blodgett photoresist film system, **lithog.** characterization of)

IT **131482-99-0P 131483-12-0P**
RL: PREP (Preparation)
(prepn. and **lithog.** characterization of Langmuir-Blodgett film system of, for photoresists applications)

IT 89-32-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with disilane-contg. diamine, in prepn. of photosensitive polyimide for application as **lithog.** photoresist)

IT 133368-20-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with disilane-contg. polyamic acids, in prepn. of photosensitive polyimide for **lithog.**)

IT 126390-65-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with tetracarboxylic dianhydride, in prepn. of photosensitive polyimide for **lithog.** applications)

L47 ANSWER 30 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1991:91787 Document No. 114:91787 Extreme ultraviolet resist and mirror characterization: studies with a laser plasma source.

Kubiak, Glenn D.; Outka, Duane A.; Rohlfing, Celeste M.; Zeigler, John M.; Windt, David L.; Waskiewicz, Warren K. (Sandia Natl. Lab., Livermore, CA, 94551-0969, USA). Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures, 8(6), 1643-7 (English) 1990. CODEN: JVTBD9. ISSN: 0734-211X.

AB A monochromatized laser-produced plasma source of extreme UV (XUV) radiation was used to study resists and reflective multilayers for projection x-ray **lithog.** Near-edge x-ray absorption fine structure (NEXAFS) spectra, exposure sensitivity, and contrast of selected polysilane resists at photon energies near 100 eV are reported. Absorption resonance features in the NEXAFS spectra were assigned, based on ab initio quantum chem. calcns., to excitation into Si-Si and Si-C σ* orbitals. Using monochromatized XUV exposures on the Si-Si σ* resonance at 105 eV, followed by solvent dissoln. development, the exposure sensitivity curves of these resists were measured. Sensitivities in the range of 600-3000 mJ/cm2 and contrasts in the range from 0.5-1.4, depending on the polysilane side chain were obsd. Exposure sensitivity measurements were also performed below the edge at 92 eV. Only minor differences from the results at 105 eV were found which can be accounted for by a simple decrease in film absorption. The variation in Mo/Si multilayer mirror reflectance as a function of wavelength was also measured for 2 mirrors having nearly identical layer periods, but different nos. of layer pairs (N). Increasing N from 20 to 40 increased the first order peak reflectance from 39% ± 2% to 50% ± 3% and narrowed the reflectance bandwidth from 7% to 5.6%. These results are in accord with calcns. which use optical consts. from the literature, and a Debye-Waller interfacial roughness factor to account for interfacial reflectance losses.

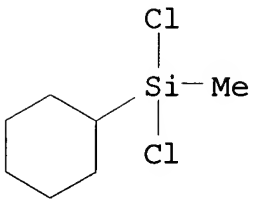
IT **109088-92-8**
RL: USES (Uses)
(spectroscopic and **lithog.** characterization of, near-edge x-ray absorption structures of, using laser plasma source)

RN 109088-92-8 HCAPLUS

CN Silane, dichlorocyclohexylmethyl-, polymer with 1,1-dichloro-1,2,2,2-tetramethyldisilane (9CI) (CA INDEX NAME)

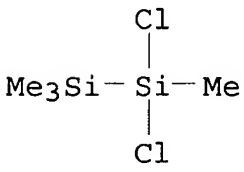
CM 1

CRN 5578-42-7
CMF C7 H14 Cl2 Si



CM 2

CRN 4518-99-4
CMF C4 H12 Cl2 Si2

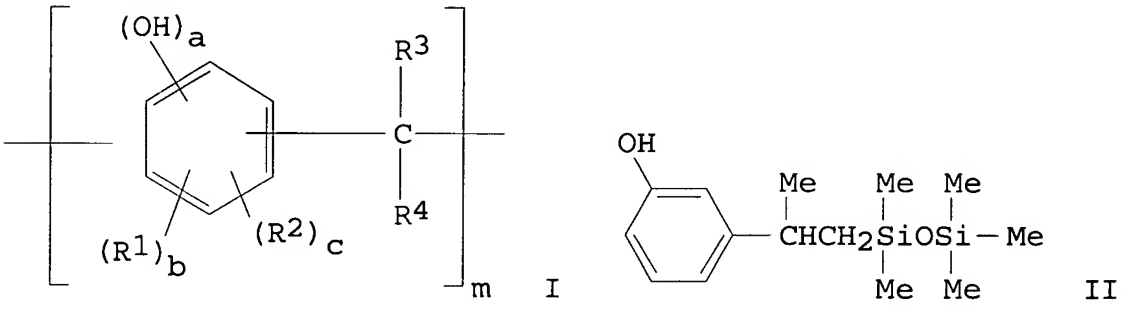


CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST laser plasma x ray source **lithog**; polysilane resist extreme UV characterization NEXAFS; mirror **lithog** extreme UV laser plasma
IT X-ray
(sources, laser plasma for soft, for **lithog.** applications)
IT Plasma
(laser-induced, construction and application of, as extreme-UV and soft x-ray source, for **lithog.**)
IT Mirrors
(multilayer, for projection **lithog.**, extreme-UV characterization of, using laser plasma)
IT Ultraviolet sources
(vacuum-, laser plasma for, for **lithog.** applications)
IT Resists
(x-ray, polysilanes as, **lithog.** and NEXAFS spectra of, using laser plasma radiation source)
IT **Lithography**
(x-ray, reflective multilayers for, characterization of, using laser plasma radiation source)

IT 88993-02-6 **109088-92-8**
RL: USES (Uses)
(spectroscopic and **lithog.** characterization of, near-edge x-ray absorption structures of, using laser plasma source)

L47 ANSWER 31 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1989:125491 Document No. 110:125491 Photosensitive coating composition containing silicon-containing polymer. Horiguchi, Rumiko; Hayase, Shuzi; Onishi, Yasunobu (Toshiba Corp., Japan). Ger. Offen. DE 3810247 A1 19881006, 44 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1988-3810247 19880325. PRIORITY: JP 1987-72113 19870326; JP 1987-245497 19870929; JP 1987-263965 19871021.

GI



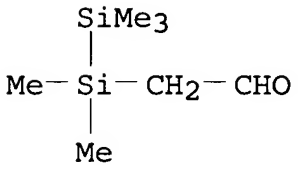
AB The title compn. contains a photosensitive material and a polymer having recurring units of the formula I [R1-R4 = H, alkyl, alkoxy, alkyl; ≥1 of R1-R4 is a Si-contg. C1-10 alkyl group; m = pos. integer; a, b = 1-3; c = 0-2; a + b + c ≤ 4]. The material has improved resistance to O plasma and can be used in **photolithog.** applications. Thus, a mixt. of II-m-cresol-p-cresol-HCHO copolymer and 2,3,4-trihydroxybenzophenone bis(1,2-naphthoquinone-2-diazido-5-sulfonate) was used to form a photoresist layer.

IT **119588-25-9 119588-29-3 119608-31-0 119608-40-1**
RL: USES (Uses)
(photoresist contg.)

RN 119588-25-9 HCAPLUS
CN Acetaldehyde, (pentamethyldisilanyl)-, polymer with 1,3-benzenediol (9CI) (CA INDEX NAME)

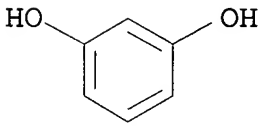
CM 1

CRN 119588-24-8
CMF C7 H18 O Si2



CM 2

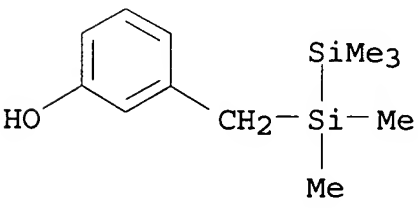
CRN 108-46-3
CMF C6 H6 O2



RN 119588-29-3 HCAPLUS
CN Formaldehyde, polymer with 1,3-benzenediol and 3-[(pentamethyldisilanyl)methyl]phenol (9CI) (CA INDEX NAME)

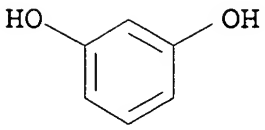
CM 1

CRN 119588-28-2
CMF C12 H22 O Si2



CM 2

CRN 108-46-3
CMF C6 H6 O2



CM 3

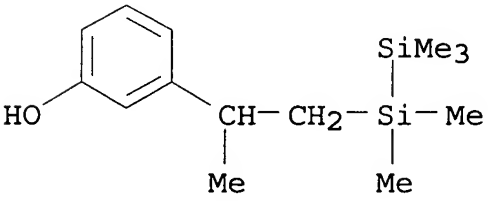
CRN 50-00-0
CMF C H2 O

$H_2C{=}O$

RN 119608-31-0 HCAPLUS
CN Formaldehyde, polymer with 3-[1-methyl-2-(pentamethyldisilanyl)ethyl]phenol and 3-methylphenol (9CI) (CA INDEX NAME)

CM 1

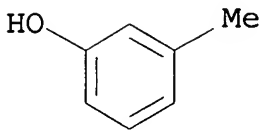
CRN 119608-30-9
CMF C14 H26 O Si2



CM 2

CRN 108-39-4

CMF C7 H8 O



CM 3

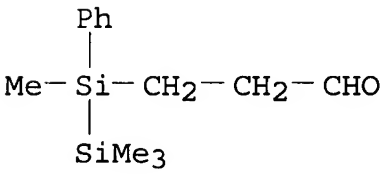
CRN 50-00-0
CMF C H2 O

$H_2C{=}O$

RN 119608-40-1 HCAPLUS
CN Propanal, 3-(1,2,2,2-tetramethyl-1-phenyldisilanyl)-, polymer with 1,3-benzenediol (9CI) (CA INDEX NAME)

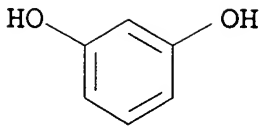
CM 1

CRN 119608-39-8
CMF C13 H22 O Si2



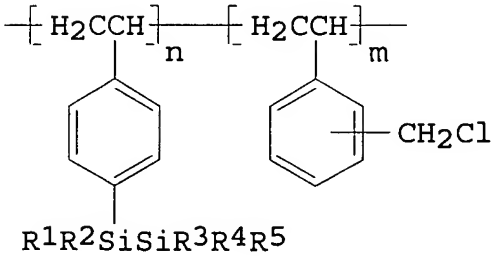
CM 2

CRN 108-46-3
CMF C6 H6 O2



IC ICM G03F007-00
ICS G03F007-08; G03C001-72
ICA C08L061-04; C09D003-54; C09D003-81; H01L021-312
CC 74-6 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **photolithog** silicon contg polymer photoresist
IT 119588-16-8 119588-17-9 119588-19-1 119588-20-4 119588-21-5
119588-23-7 **119588-25-9** 119588-27-1 **119588-29-3**
119588-30-6 119588-31-7 119588-32-8 119588-34-0 119588-35-1
119608-20-7 119608-22-9 119608-23-0 119608-25-2 119608-27-4
119608-29-6 **119608-31-0** 119608-32-1 119608-33-2
119608-34-3 119608-35-4 119608-37-6 119608-38-7
119608-40-1
RL: USES (Uses)
(photoresist contg.)

L47 ANSWER 32 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1988:213981 Document No. 108:213981 Resist materials and pattern formation method. Watanabe, Fumitake (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 62280839 A2 19871205 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-126591 19860530.
GI



I

AB The copolymers I (R1-5 = H, lower alkyl) are used as the title resist materials. The title method involves coating a substrate with a polymer layer and with the resist material, **lithog.**

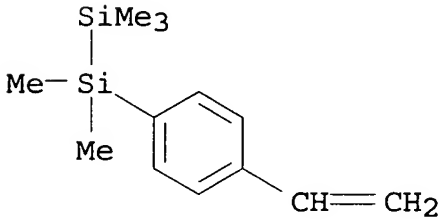
patterning of the resist layer and dry etching of the polymer layer. The resist is resistant to dry etching and provides good pattern reprodn. Thus, a monomer was prepd. by Grignard reaction of p-chlorostyrene and reaction with chloropentamethyldisilane. A polymer having wt.-av. mol. wt. 105,000 was obtained by the addn. polymn. of chloromethylated styrene and the above monomer. A Si substrate coated with a 1.5-μ layer of MP-1300 (resist) was overcoated with the soln. of the above polymer to form a 0.3-μ layer, and was patterned with electron beam. Etching of the developed material gave well-reproduced pattern.

IT **114465-16-6**
RL: USES (Uses)
(radiation-sensitive resist, dry etching-resistant)

RN 114465-16-6 HCAPLUS
CN Disilane, (4-ethenylphenyl)pentamethyl-, polymer with (chloromethyl)ethenylbenzene (9CI) (CA INDEX NAME)

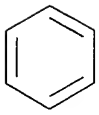
CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

CRN 30030-25-2
CMF C9 H9 Cl
CCI IDS



D1—CH_2—Cl

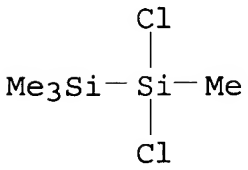
D1—CH═CH_2

IC ICM G03C001-71
ICS G03C001-71; G03F007-10
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT **114465-16-6**
RL: USES (Uses)
(radiation-sensitive resist, dry etching-resistant)

L47 ANSWER 33 OF 33 HCAPLUS COPYRIGHT 2006 ACS on STN
1987:487003 Document No. 107:87003 Electronic spectra of hindered silyl and organo-substituted polysilylenes. Harrah, L. A.; Zeigler, J. M. (Sandia Natl. Lab., Albuquerque, NM, 87185, USA). Macromolecules, 20(8), 2037-9 (English) 1987. CODEN: MAMOBX. ISSN: 0024-9297.
AB The introduction of Me3Si substituents onto polysilylene chains substantially decreased the fluorescence quantum yields compared with those of alkyl-substituted polysilylenes. The quantum yield decrease was accompanied by an apparent increase in photosensitivity. This was attributed to an augmentation of the intersystem crossing rate and not to a substituent size effect since incorporation of tert-Bu groups in place of Me3Si groups reduced the fluorescence yields without increasing the photochem. sensitivity.
IT **109088-90-6 109088-91-7 109088-92-8 109088-93-9 109281-91-6**
RL: USES (Uses)
(photosensitivity and spectral properties of)
RN 109088-90-6 HCAPLUS
CN Disilane, 1,1-dichloro-1,2,2,2-tetramethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

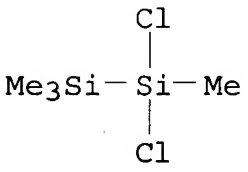
CRN 4518-99-4
CMF C4 H12 Cl2 Si2



RN 109088-91-7 HCAPLUS
CN Disilane, 1,1-dichloro-1,2,2,2-tetramethyl-, polymer with dichloromethylpropylsilane (9CI) (CA INDEX NAME)

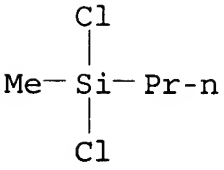
CM 1

CRN 4518-99-4
CMF C4 H12 Cl2 Si2



CM 2

CRN 4518-94-9
CMF C4 H10 Cl2 Si

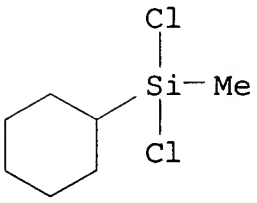


RN 109088-92-8 HCAPLUS

CN Silane, dichlorocyclohexylmethyl-, polymer with 1,1-dichloro-1,2,2,2-tetramethyldisilane (9CI) (CA INDEX NAME)

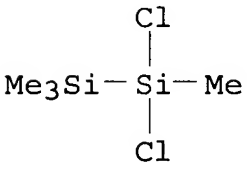
CM 1

CRN 5578-42-7
CMF C7 H14 Cl2 Si



CM 2

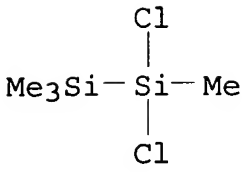
CRN 4518-99-4
CMF C4 H12 Cl2 Si2



RN 109088-93-9 HCAPLUS
CN Silane, dichloromethylphenyl-, polymer with 1,1-dichloro-1,2,2,2-tetramethyldisilane (9CI) (CA INDEX NAME)

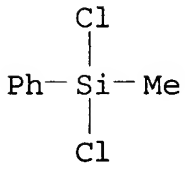
CM 1

CRN 4518-99-4
CMF C4 H12 Cl2 Si2



CM 2

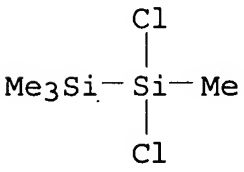
CRN 149-74-6
CMF C7 H8 Cl2 Si



RN 109281-91-6 HCAPLUS
CN Silane, dichlorodimethyl-, polymer with 1,1-dichloro-1,2,2,2-tetramethyldisilane (9CI) (CA INDEX NAME)

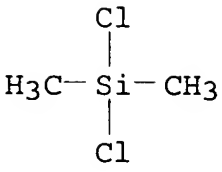
CM 1

CRN 4518-99-4
CMF C4 H12 Cl2 Si2



CM 2

CRN 75-78-5
CMF C2 H6 Cl2 Si

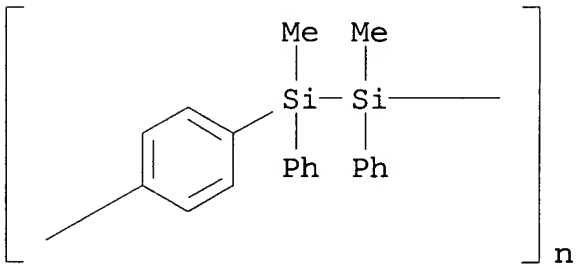


CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
ST fluorescence alkyl silyl substituted polysilylene; electronic spectrum polysilylene substituent effect; photolysis silyl polysilylene intersystem crossing; photoresist **lithog** silyl alkyl polysilylene; photosensitivity alkyl silyl substituted polysilylene
IT **109088-90-6 109088-91-7 109088-92-8 109088-93-9** 109281-90-5 **109281-91-6**
RL: USES (Uses)
(photosensitivity and spectral properties of)

=> d l41 1-10 cbib abs hitstr hitind

L41 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
2003:868616 Document No. 139:371878 Method of forming fine pattern using polysilazane embedding material and manufacture of semiconductor device. Kato, Hirokazu; Onishi, Kiyonobu; Shiohara, Eiji; Kawamura, Daisuke; Nakamura, Hiroko (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003316019 A2 20031106, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-122862 20020424.
AB The process comprises the steps of (1) spin-coating a semiconductor substrate with an application-type carbon film, and baking the substrate, (2) spin-coating a a pos.-working ArF resist film on the carbon film, and prebaking the resist film, (3) exposing with an ArF excimer laser, and developing to form a resist pattern, (4) effecting an EB curing process, (5) flattening the surface by applying a photosensitive polysilazane film on the carbon film, (6) effecting overall exposure of the polysilazane film, wetting the film, and developing to expose the top surface of the resist film, (7) patterning the polysilazane film, and (8) patterning the resist film and the carbon film using polysilazane film as a mask.
IT **95014-30-5**
RL: TEM (Technical or engineered material use); USES (Uses)
(photomask; formation of fine pattern using polysilazane

embedding material in manuf. of semiconductor device)
RN 95014-30-5 HCAPLUS
CN Poly[(1,2-dimethyl-1,2-diphenyl-1,2-disilanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



IC ICM G03F007-26
ICS G03F007-075; G03F007-40; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
IT Photomasks (**lithographic** masks)
Semiconductor device fabrication
(formation of fine pattern using polysilazane embedding material in manuf. of semiconductor device)
IT 29386-52-5 **95014-30-5**
RL: TEM (Technical or engineered material use); USES (Uses)
(photomask; formation of fine pattern using polysilazane embedding material in manuf. of semiconductor device)

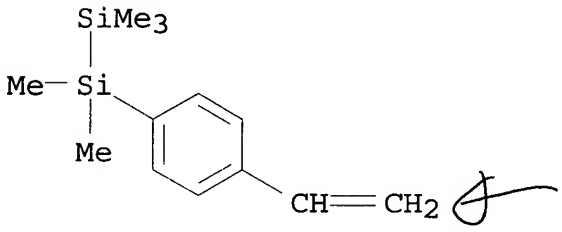
L41 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
2002:654436 Document No. 137:192767 Nanoscale patterning of salt-formable block or graft copolymer material by microphase separation. Hiraoka, Toshiro; Asakawa, Koji (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002241532 A2 20020828, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-40617 20010216.
AB Title process comprises (A) molding of ≥1 salt-formable block or graft copolymer and (B) forming of microphases by transforming the salt-formable groups into salts. Thus, a soln. contg. 2 wt% diblock copolymer of 4-vinylpyridine and Me methacrylate and 0.5 wt% acid-releasable agent NAI-105 was spin-coated on an SiO substrate, irradiated with UV light, and heated to form an islands-in-the-sea dot pattern.
IT **451514-42-4P**, p-Pentamethyldisilylstyrene-2-vinylpyridine block copolymer **784167-05-1P**

RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(diblock; in nanoscale patterning of salt-formable block or graft copolymer material by microphase sepn.)

RN 451514-42-4 HCAPLUS
CN Pyridine, 2-ethenyl-, polymer with (4-ethenylphenyl)pentamethyldisilane, block (9CI) (CA INDEX NAME)

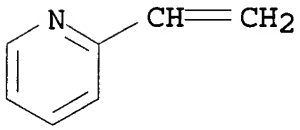
CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

CRN 100-69-6
CMF C7 H7 N

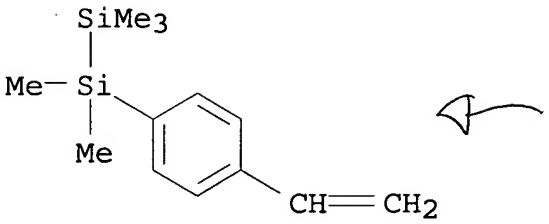


RN 784167-05-1 HCAPLUS
CN Pyridine, 2-ethenyl-, polymer with (4-ethenylphenyl)pentamethyldisilane, diblock (9CI) (CA INDEX NAME)

CM 1

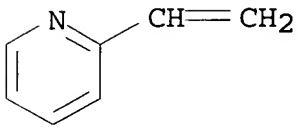
CRN 114442-01-2

CMF C13 H22 Si2



CM 2

CRN 100-69-6
CMF C7 H7 N



IC ICM C08J009-26
ICS G03F007-004; G11B005-84; H01L021-3065
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 76, 77
IT **Lithography**
(nano-; of salt-formable block or graft copolymer material by microphase sepn. for)
IT 124916-37-6P, Methacrylic acid-styrene block copolymer
146228-15-1P, Methyl methacrylate-4-vinylpyridine block copolymer
451514-42-4P, p-Pentamethyldisilylstyrene-2-vinylpyridine block copolymer 737791-65-0P 744198-61-6P **784167-05-1P**
RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(diblock; in nanoscale patterning of salt-formable block or graft copolymer material by microphase sepn.)

L41 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

2000:35044 Document No. 132:100456 Periodic porous and relief nanostructured articles. Chan, Vanessa Z. H.; Thomas, Edwin L.; Lee, Victor Y.; Miller, Robert D.; Avgeropoulos, Apostolos; Hadjichristidis, Nikos (Massachusetts Institute of Technology, USA). PCT Int. Appl. WO 2000002090 A2 20000113, 94 pp. DESIGNATED STATES: W: AU, CA, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US15068 19990702. PRIORITY: US 1998-91676 19980702.

AB The current invention involves periodically ordered nanostructured articles and methods of using and modifying the articles. In some embodiments, the invention provides periodically structured microphase-sepd. polymeric articles that include periodically occurring sep. domains. The polymeric species comprising one or more of the domains, for some embodiments, contains an inorg. species capable of forming an inorg. oxide ceramic. In another aspect, the invention provides methods for modifying the polymeric articles by oxidn. and/or radiation to form periodically structured porous and relief articles that, in some embodiments, include a ceramic oxide in their structure. The invention also provides methods of use for the novel articles and novel structures constructed utilizing the articles.

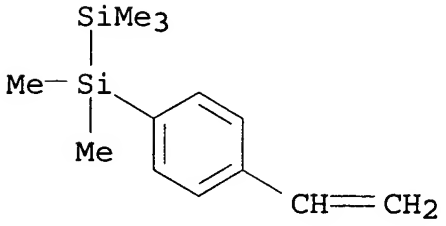
IT **114442-02-3P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction in prepg. block copolymers for forming periodic porous and relief nanostructured materials)

RN 114442-02-3 HCAPLUS

CN Disilane, (4-ethenylphenyl)pentamethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

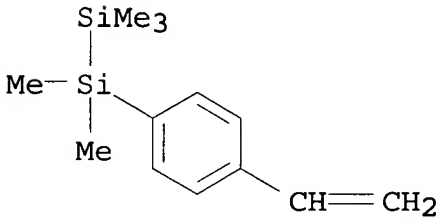
CRN 114442-01-2
CMF C13 H22 Si2



IT **207858-38-6P**, Isoprene-p-pentamethyldisilylstyrene block copolymer
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. and use in forming periodic porous and relief nanostructured materials for **photolithog.**)
RN 207858-38-6 HCAPLUS
CN Disilane, (4-ethenylphenyl)pentamethyl-, polymer with 2-methyl-1,3-butadiene, block (9CI) (CA INDEX NAME)

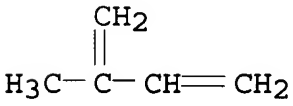
CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CM 2

CRN 78-79-5
CMF C5 H8



IC ICM G03F007-004
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT **Photolithography**
(periodic porous and relief nanostructured materials as photoresists and oxygen reactive ion barriers for)
IT 114442-01-2P, p-Pentamethyldisilylstyrene **114442-02-3P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and reaction in prepg. block copolymers for forming periodic porous and relief nanostructured materials)

IT **207858-38-6P**, Isoprene-p-pentamethyldisilylstyrene block copolymer
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. and use in forming periodic porous and relief nanostructured materials for **photolithog.**)

L41 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1998:729070 Document No. 130:66978 Curious Morphology of Silicon-Containing Polymer Films on Exposure to Oxygen Plasma. Chan, Vanessa Z.-H.; Thomas, Edwin L.; Frommer, Jane; Sampson, David; Campbell, Richard; Miller, Dolores; Hawker, Craig; Lee, Victor; Miller, Robert D. (Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139, USA). Chemistry of Materials, 10(12), 3895-3901 (English) 1998. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

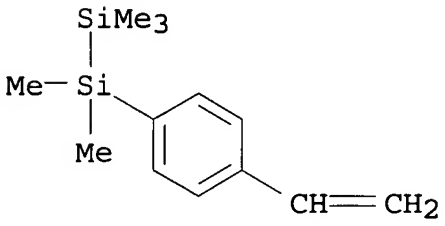
AB Thin films of silicon-contg. polymers were studied to investigate changes in surface compn. and morphol. on exposure to an oxygen plasma. For low mol. wt. poly(pentamethyldisilylstyrene) (P(PMDSS)), a reticulated structure was obsd. by at. force microscopy (AFM) that could limit future **lithog.** applications of these materials. The reticulations were of approx. 1 μm in width and 5 μm in length, though a higher mol. wt. polymer resulted in smaller feature sizes. In polysilane polymers contg. silicon in the backbone and mol. wts. significantly larger than the entanglement mol. wt., the feature dimensions were even smaller. Films etched at lower temp. (0 °C) displayed none of the reticulated morphol., retaining instead the smooth appearance of pre-etched films. It was found by XPS (XPS) and Auger electron spectroscopy (AES) that a thin (<100 Å) layer of SiOx formed on the surface of all of the studied silicon-contg. polymer films. Appearance of the reticulated morphol. required the combined presence of heating, oxygen plasma, and silicon in the polymer. The reticulated structures are believed to result from the destabilization of the thin films as they undergo the transition from a nonpolar organosilane to a polar oxide.

IT **114442-02-3**, Poly(pentamethyldisilylstyrene)
RL: PRP (Properties)
(morphol. of silicon-contg. polymer films on exposure to oxygen plasma)

RN 114442-02-3 HCAPLUS
CN Disilane, (4-ethenylphenyl)pentamethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 114442-01-2
CMF C13 H22 Si2



CC 36-2 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 37
IT 31324-77-3, Dichloromethylphenylsilane homopolymer 76188-55-1, Dichlorophenylmethylsilane homopolymer, sru **114442-02-3**, Poly(pentamethyldisilylstyrene) 134708-62-6, Poly[methyl[4-(trimethylsilyl)phenyl]silylene] 134960-55-7
RL: PRP (Properties)
(morphol. of silicon-contg. polymer films on exposure to oxygen plasma)

L41 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1991:217910 Document No. 114:217910 XUV resist characterization: studies with a laser plasma source. Kubiak, Glenn D. (Sandia Natl. Lab., Livermore, CA, 94551-0969, USA). Proceedings of SPIE-The International Society for Optical Engineering, 1343(X-Ray/EUV Opt. Astron., Microsc., Polarim., Proj. Lithogr.), 283-91 (English) 1991. CODEN: PSISDG. ISSN: 0277-786X.
AB A monochromatized, laser-made plasma source of XUV radiation was used to study resists for use in projection x-ray **lithog.** Exposure sensitivity and contrast of poly(cyclohexylmethyl-trimethylsilylmethylsilane) (CMTMS) were characterized at photon energies near 100 eV, where projection x-ray **lithog.** is being developed. Using monochromatized XUV exposures on the Si-Si σ* resonance at 105 eV, followed by solvent dissoln. development, the polysilane yielded pos. tone, at a sensitivity of 600 mJ/cm2 to achieve a satn. depth of 0.17 μm and a contrast of

1.4. The tone reversed beyond this satn. dose (i.e., greater doses yielding smaller developed depths). Exposure sensitivity was also measured below the edge at 92 eV where only minor differences in contrast and satn. dose from the results at 105 eV were obsd. These can be accounted for by a simple decrease in film absorption. The exposure sensitivities of selected com. available electron beam resists have also been characterized. Two PMMA resists (Mn = 74 K and 500 K) and the novolak-based SYSTEM-9 (Shipley Co.) have been exposed to monochromatized radiation at 140 Å. PMMA exhibits a sensitivity of 600 mJ/cm2 (0.58 μm developed depth) and a contrast of 1.8 and the SYSTEM-9 resist requires only 22 mJ/cm2 (0.43 μm depth) and exhibits a contrast of 4.1.

IT **129613-73-6**, Cyclohexylmethylsilane-trimethylsilylmethylsilane polymer
RL: USES (Uses)
(photoresist of, extreme UV characterization of, for projection x-ray **lithog.**)

RN 129613-73-6 HCAPLUS

CN Disilane, 1,1,1,2-tetramethyl-, polymer with cyclohexylmethylsilane (9CI) (CA INDEX NAME)

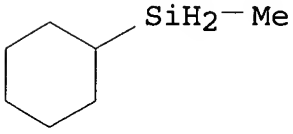
CM 1

CRN 81633-92-3
CMF C4 H14 Si2

$Me_3Si-SiH_2-Me$

CM 2

CRN 2096-99-3
CMF C7 H16 Si



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST photoresist XUV silane polymer projection **lithog**
IT Resists
(photo-, UV, polymeric, for projection x-ray **lithog.**)
IT 9011-14-7, PMMA 124024-87-9, SYSTEM-9 **129613-73-6**,
Cyclohexylmethylsilane-trimethylsilylmethylsilane polymer
RL: USES (Uses)
(photoresist of, extreme UV characterization of, for projection x-ray **lithog.**)

L41 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1990:542062 Document No. 113:142062 Soft x-ray resist characterization: studies with a laser plasma x-ray source.
Kubiak, Glenn D.; Outka, Duane A. (Sandia Natl. Lab., Livermore, CA, 94551-0969, USA). Proceedings of SPIE-The International Society for Optical Engineering, 1263(Electron-Beam, X-Ray, Ion-Beam Technol.: Submicrometer Lithogr. 9), 272-81 (English) 1990. CODEN: PSISDG. ISSN: 0277-786X.
AB Little work has been done to characterize the exposure sensitivity, contrast, and tone of candidate resists for photon energies between 100 and 300 eV, the range in which projection soft x-ray **lithog.** will be developed. The characterization is reported of near-edge x-ray absorption fine structure (NEXAFS) spectra, exposure, sensitivity, contrast, and post-exposure processing of selected polysilane resists at photon energies close to the Si L2,3 absorption edge (100 eV). Sensitivities in the range, 600-3000 mJ/cm2, and contrasts from 0.5 to 1.4, dependent on the polysilane side chain, were found. Exposing resist films to O after XUV exposure, but before development, increased the sensitivity markedly.
IT **129613-72-5 129613-73-6**
RL: USES (Uses)
(soft x-ray resist of, characterization of)
RN 129613-72-5 HCAPLUS
CN Disilane, 1,1,1,2-tetramethyl-, polymer with methylphenylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 81633-92-3
CMF C4 H14 Si2

$Me_3Si-SiH_2-Me$

CM 2

CRN 766-08-5
CMF C7 H10 Si

$Me-SiH_2-Ph$

RN 129613-73-6 HCAPLUS
CN Disilane, 1,1,1,2-tetramethyl-, polymer with cyclohexylmethylsilane (9CI) (CA INDEX NAME)

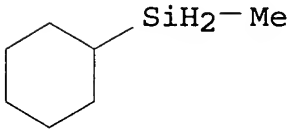
CM 1

CRN 81633-92-3
CMF C4 H14 Si2

$Me_3Si-SiH_2-Me$

CM 2

CRN 2096-99-3
CMF C7 H16 Si



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 76188-55-1, Poly(phenylmethylsilane) 88993-02-6
129613-72-5 129613-73-6
RL: USES (Uses)
(soft x-ray resist of, characterization of)

L41 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1988:414780 Document No. 109:14780 Silicon-containing

α-methylstyrene polymer and UV photoresists. Saigo, Kazuhide (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 62256804 A2 19871109 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-101367 19860430.

AB The photoresist having the following compn. and features is used in providing submicron patterns with improved accuracy. It contains 4-allyldimethylsilyldimethylsilyl-α-methylstyrene polymer and a bisazide. It shows improved sensitivity to a near UV light and resistance to dry etching and is suitable for use as a top photoresist layer in a photoresist bilayer **lithog.**

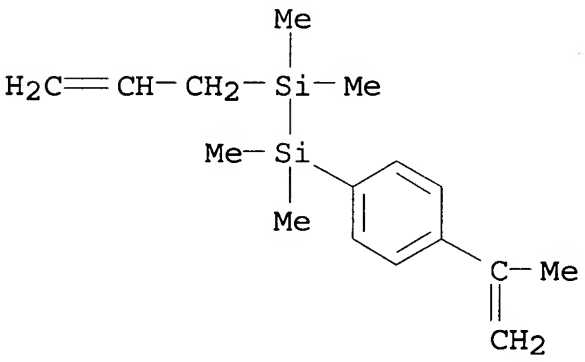
IT **114859-21-1P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and use of, as UV photoresist)

RN 114859-21-1 HCAPLUS

CN Disilane, 1,1,2,2-tetramethyl-1-[4-(1-methylethenyl)phenyl]-2-(2-propenyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 114859-20-0
CMF C16 H26 Si2



IC ICM C08F012-14
ICS C08K005-28; C08L025-18; G03C001-00; G03C001-68; G03C001-71; H01L021-30

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

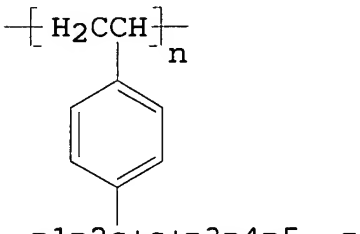
ST silylmethylstyrene polymer UV photoresist; **lithog** bilayer silylmethylstyrene polymer photoresist

IT **114859-21-1P**
RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. and use of, as UV photoresist)

L41 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1988:213980 Document No. 108:213980 Resist materials and pattern formation method. Watanabe, Fumitake (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 62280840 A2 19871205 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-126592 19860530.

GI



$R^1R^2SiSiR^3R^4R^5$ I

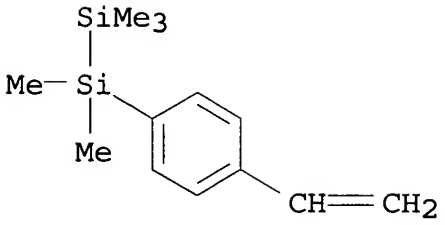
AB Disilanylstyrene polymers I (R1-5 = H, lower alkyl) are used as title resist materials. The title method involves coating of a substrate with a polymer layer and with the resist material, **lithog.** patterning of the resist layer, and dry etching of the polymer layer. The resist is resistant to dry etching and provides good pattern reprodn. Thus, a monomer was prepd. by Grignard reaction of p-chlorostyrene and reaction with chloropentamethyldisilane. A polymer having wt.-av. mol. wt. 52,000 was obtained by the polymn. of the above monomer. A Si substrate coated with a layer of MP-1300 (resist) was overcoated with the soln. of the above polymer and was patterned with electron beam. Etching of the MP-1300 layer gave well-reproduced pattern.

IT **114442-02-3**
RL: USES (Uses)
(radiation-sensitive resist, dry etching-resistant)

RN 114442-02-3 HCAPLUS
CN Disilane, (4-ethenylphenyl)pentamethyl-, homopolymer (9CI) (CA INDEX NAME)

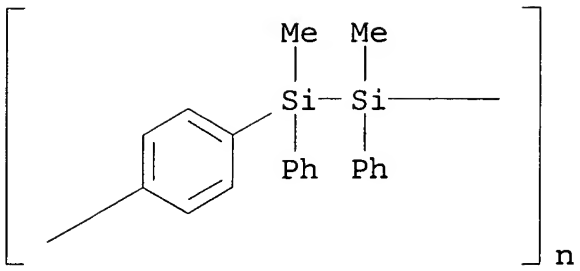
CM 1

CRN 114442-01-2
CMF C13 H22 Si2

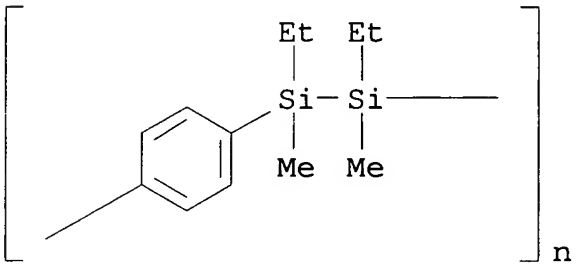


IC ICM G03C001-71
ICS G03C001-71; G03F007-10
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT **114442-02-3**
RL: USES (Uses)
(radiation-sensitive resist, dry etching-resistant)

L41 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1987:166208 Document No. 106:166208 Photoresist compositions containing silane derivative polymers. Inoue, Takashi; Nate, Kazuo; Sugiyama, Hisashi (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61189533 A2 19860823 Showa, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-29433 19850219.
AB The claimed photosensitive resin compns. contain an org. Si polymer and a photoradical generator which generates halogen radicals upon light irradn. The compns. may also contain a dye. The org. Si polymers having structural repeating units of the formula [ZSiR1R2(SiR3R4)n] (I: R1-R4 = Me, Et, Pr, Ph; Z = divalent org. moiety; n = 1-5) are esp. useful in the above compns. The radical generator is preferably selected from trihalomethyltriazine derivs. and tribromomethyl Ph sulfone. Thus, poly[p-bis(chloromethylphenylsilyl)benzene] (I: R1 = R3 = Me; R2 = R4 = Ph; Z = p-phenylene; n = 1) and 2,4,6-tris(trichloromethyl)-s-triazine were dissolved in PhMe and coated on a Si wafer to form a photoresist layer which showed sensitivity to 230-370 nm light.
IT **95014-30-5P 95014-31-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and use of, in UV-sensitive photoresists)
RN 95014-30-5 HCAPLUS
CN Poly[(1,2-dimethyl-1,2-diphenyl-1,2-disilanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



RN 95014-31-6 HCAPLUS
CN Poly[(1,2-diethyl-1,2-dimethyl-1,2-disilanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



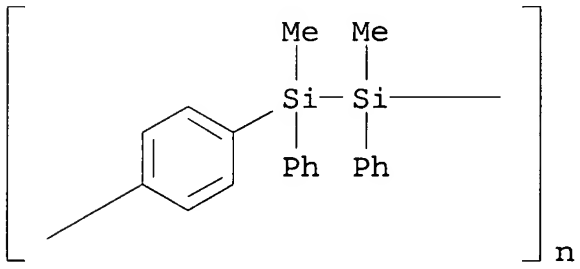
IC ICM G03C001-71
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
IT Semiconductor devices
(**lithog.** fabrication of, UV-sensitive photoresists for)
IT **95014-30-5P 95014-31-6P** 95014-59-8P
95014-60-1P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and use of, in UV-sensitive photoresists)

L41 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN
1985:158084 Document No. 102:158084 Photo- and radiation-sensitive organopolymeric material. Nate, Kazuo; Inoue, Takashi; Yokono, Hitoshi; Ishikawa, Mitsuo; Kumada, Makoto (Hitachi, Ltd. , Japan). Eur. Pat. Appl. EP 129834 A2 19850102, 20 pp. DESIGNATED STATES: R: DE, FR, GB. (English). CODEN: EPXXDW. APPLICATION: EP 1984-107029 19840619. PRIORITY: JP 1983-112744 19830624; JP 1983-118332 19830701; JP 1983-153294 19830824; JP 1983-169185 19830916.
AB A resist material is described useful in **lithog.** prepn. of

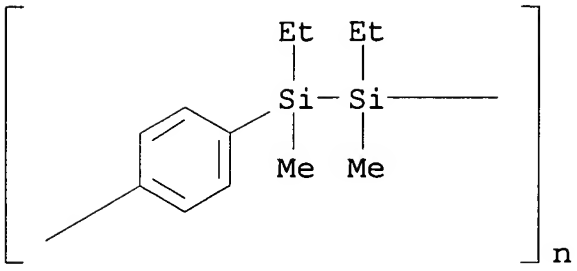
integrated circuits and semiconductor devices. The material has high sensitivity to light and high-energy radiation (electron beam, x-ray etc.), good resistance to dry etching, good adhesion to a support and heat resistance. It comprises a polymer having ≥1 [R-SiR1R2(SiR3R4)n] units (R = divalent org. group; R1-R4 ; Me, Et, Pr, Ph; n = 1-5). Thus, a Si wafer was spin coated with a 10 wt.% soln. of a polymer (C6H4-p-SiMePhSiMePh) in PhMe to give a 0.5 μm thick film, prebaked at 90° for 30 min, imagewise exposed with a 500 W Xe-Hg lamp (intensity 12 mW/cm2 at 254 nm) for 30 s, dipped in a solvent mixt. of PhMe-iso-PrOH (1:3 vol. ratio) for 1 min, and rinsed with iso-PrOH to give a pos. image. The resist pattern had an excellent resistance to an O plasma, and a thermal decompn. initiation temp. of 400°.

IT **95014-30-5P 95014-31-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and application of, as photo- and radiation-sensitive **lithog.** resist, with improved sensitivity and plasma etching resistance)

RN 95014-30-5 HCAPLUS
CN Poly[(1,2-dimethyl-1,2-diphenyl-1,2-disilanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



RN 95014-31-6 HCAPLUS
CN Poly[(1,2-diethyl-1,2-dimethyl-1,2-disilanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



IC ICM G03F007-10
ICS C08G077-60; C08G077-48
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST **lithog** resist silicone polymer; photoresist **lithog** silicone polymer; silicone polymer radiation resist photoresist; elec circuit resist silicone polymer; semiconductor device resist silicone polymer; plasma etching resistant resist **lithog**
IT Semiconductor devices
(photo- and radiation-sensitive resists for **lithog.** prepn. of, silicon-contg. polymers as, with increased sensitivity and plasma etching resistance)
IT Electric circuits
(integrated, photo- and radiation-sensitive silicon-contg. polymers for **lithog.** prepn. of, with increased sensitivity and plasma etching resistance)
IT **95014-30-5P 95014-31-6P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and application of, as photo- and radiation-sensitive **lithog.** resist, with improved sensitivity and plasma etching resistance)
IT 95014-58-7P
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and polymn. of, in prepn. of **lithog.** photo- and radiation resist)
IT 18666-79-0P
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(prepn. and polymn. of, in prepn. of photo- and radiation resist material for **lithog.**)

=> d l48 1-16 ti

L48 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN

TI Chemical structure and morphology of thin bilayer and composite organosilicon and fluorocarbon microwave plasma polymer films

L48 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Correlation of morphology and barrier properties of thin microwave plasma polymer films on metal substrate

L48 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Tailoring of the morphology and chemical composition of thin organosilane microwave plasma polymer layers on metal substrates

L48 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI In situ spectroscopic and corrosion studies of ultra-thin gradient plasma polymer layers on zinc

L48 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Applied interface analysis and interfacial engineering for improved corrosion protection by organic coatings

L48 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Chemical structure and morphology of thin, organo-silicon plasma-polymer films as a function of process parameters

L48 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI One-dimensional silicon chain architecture: molecular dot, rope, octopus, and toroid

L48 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Photochromic compound optical recording substance and optical recording material using it

L48 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Plasma copolymerization of pyrrole with Si-compounds

L48 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Synthesis of silylborazines and their utilization as precursors to silicon-containing boron nitride

L48 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Multi-block copolymer based tunable light emitting diode, polymers suitable therefor and oligomers

L48 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Organosilicon polymers with alternating σ- and π-conjugated systems

L48 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Thermal decomposition of polymeric silanes

L48 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Plasma polymerization of organosilicon compounds

L48 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Amorphous polymeric halosilane films

L48 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
TI Aging process in plasma-polymerized organosilicon thin films

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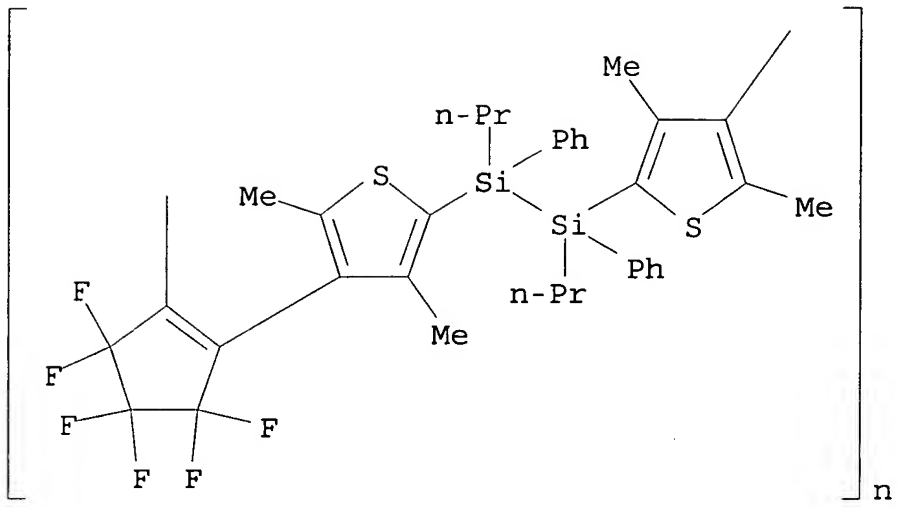
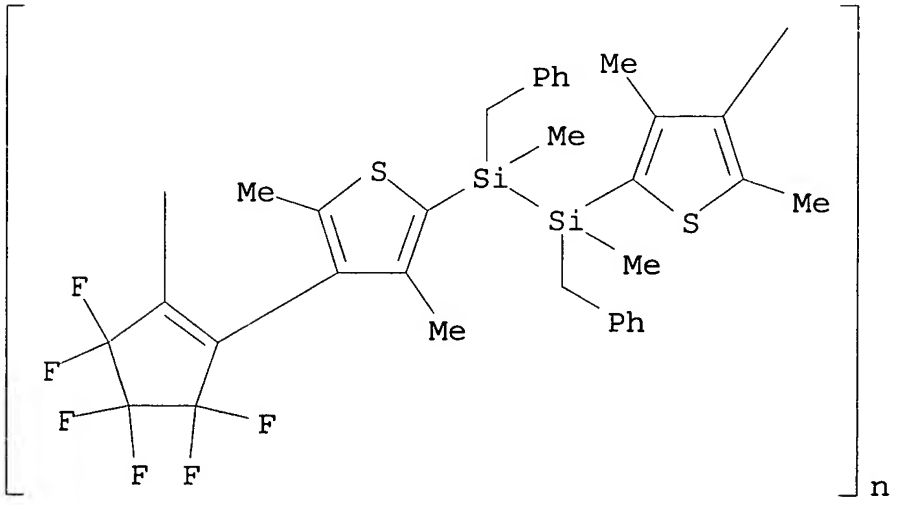
=> d l48 8, 15 cbib abs hitstr hitind

L48 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
2000:254668 Document No. 132:301014 Photochromic compound optical recording substance and optical recording material using it. Fukutome, Masato (Kyocera Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2000112074 A2 20000421, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-278438 19980930.
GI For diagram(s), see printed CA Issue.
AB The substance is a photochromic compd. I [A = halo; R1-4 = H, halo, alkyl, aryl, alkoxy, amino, (all may be substituted); R5-8 = alkyl; X = S, N, O; n = pos. integer; m = 2-5]. The material comprises a support coated with a recording layer contg. I. The substance shows high **reflection** change, good dispersion in a polymer at high d., phase sepn. is prevented, and the material shows good durability in repeated recording and erasing.
IT **264149-94-2 264149-95-3 264149-96-4**
264149-98-6 264149-99-7 264150-00-7
264150-01-8 264150-02-9 264150-03-0
264150-04-1 264150-05-2
RL: DEV (Device component use); USES (Uses)
(optical recording material using photochromic compd.)
RN 264149-94-2 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-thiophenediyl)(1,2-diphenyl-1,2-dipropyl-1,2-disilanediyl)(3,5-dimethyl-2,4-thiophenediyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)

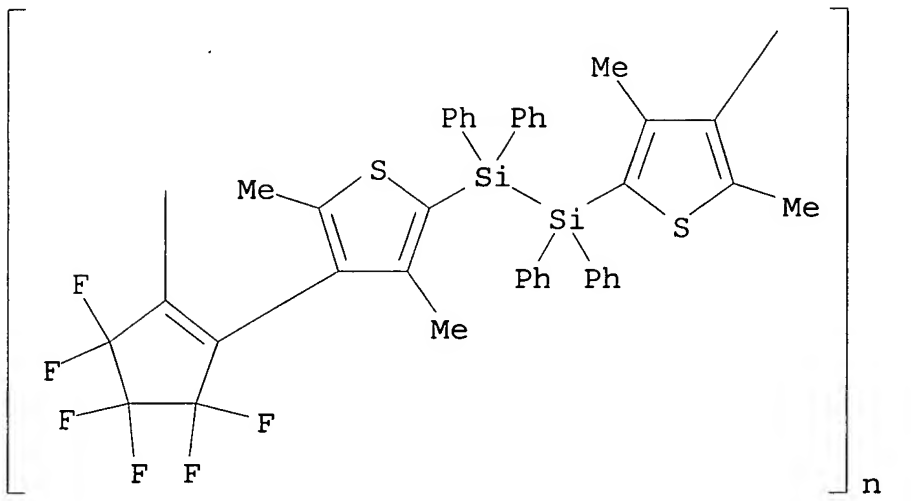


RN 264149-95-3 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-thiophenediyl)[1,2-dimethyl-1,2-bis(phenylmethyl)-1,2-disilanediyl](3,5-dimethyl-2,4-thiophenediyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)

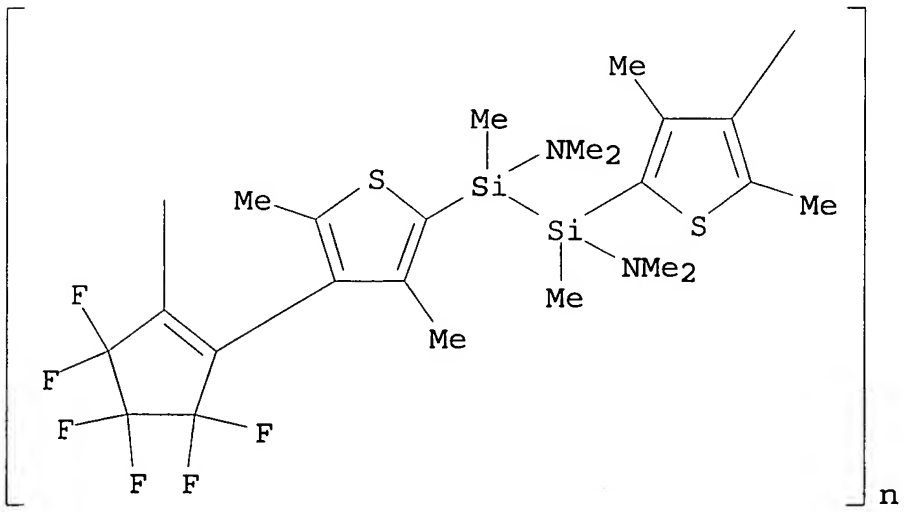


RN 264149-96-4 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-thiophenediyl)(1,1,2,2-tetraphenyl-1,2-disilanediyl)(3,5-dimethyl-2,4-thiophenediyl)(3,3,4,4,5,5-hexafluoro-

1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)

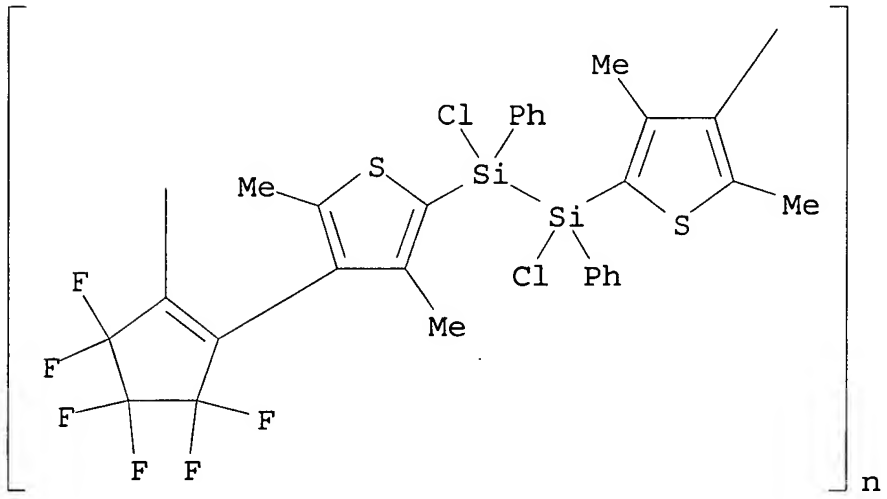


RN 264149-98-6 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-thiophenediyl)[1,2-bis(dimethylamino)-1,2-dimethyl-1,2-disilanediyl](3,5-dimethyl-2,4-thiophenediyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



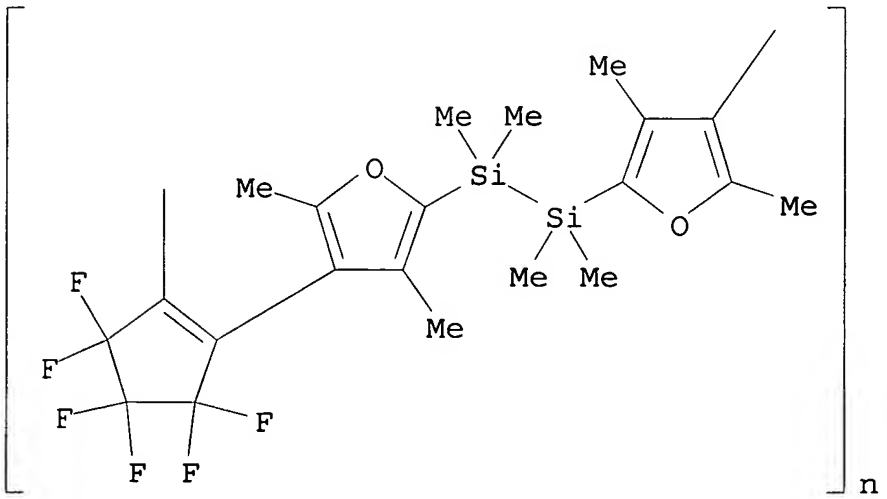
RN 264149-99-7 HCAPLUS

CN Poly[(3,5-dimethyl-4,2-thiophenediyl)(1,2-dichloro-1,2-diphenyl-1,2-disilanediyl)(3,5-dimethyl-2,4-thiophenediyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)

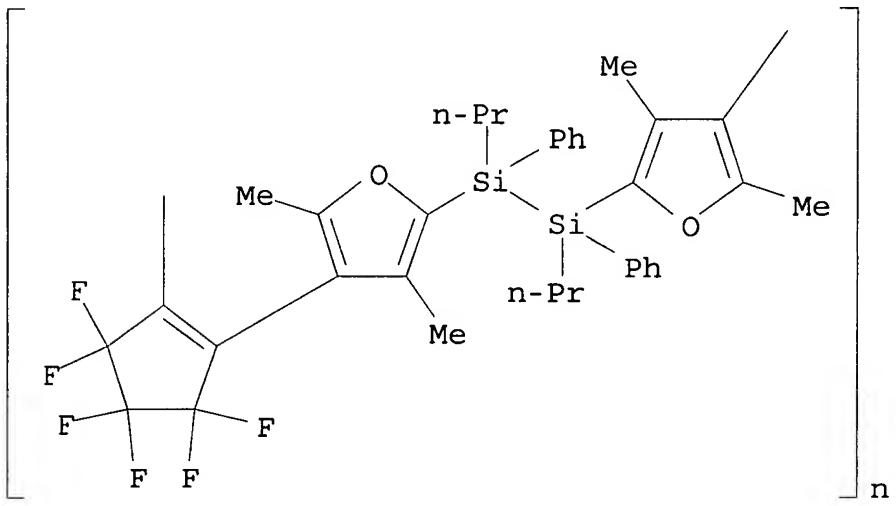


RN 264150-00-7 HCAPLUS

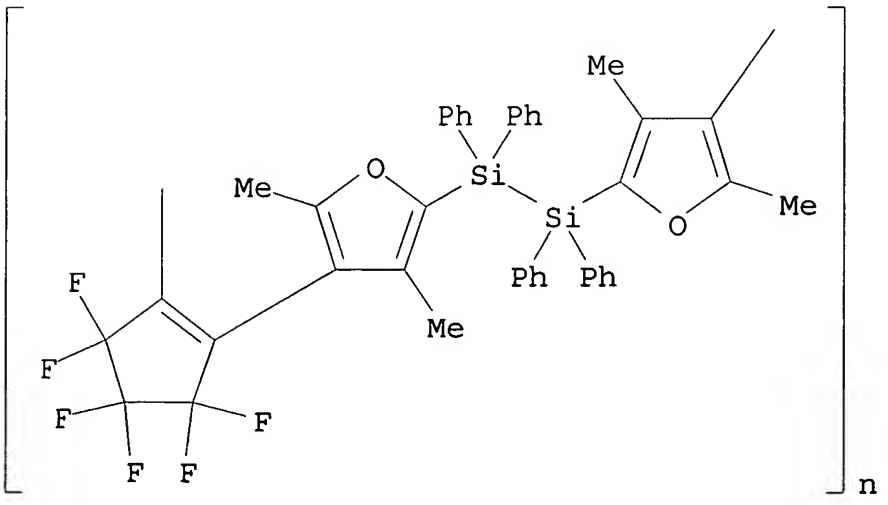
CN Poly[(3,5-dimethyl-4,2-furandiyl)(1,1,2,2-tetramethyl-1,2-disilanediyl)(3,5-dimethyl-2,4-furandiyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



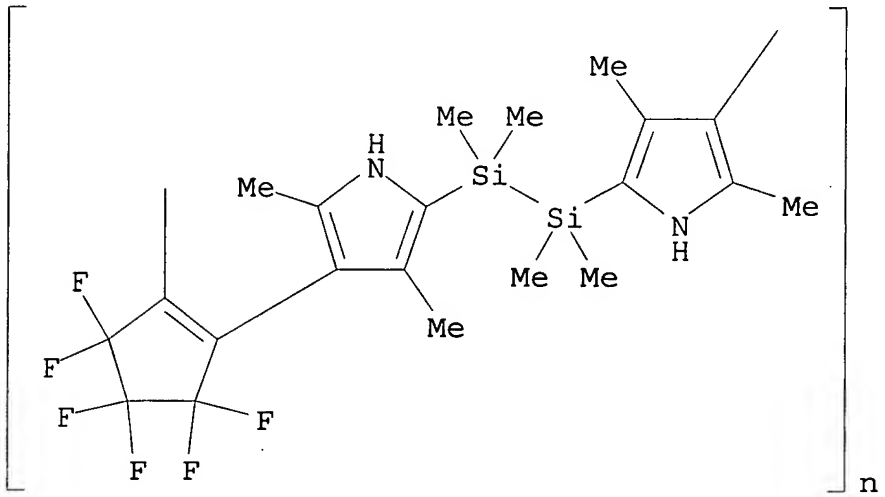
RN 264150-01-8 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-furandiyl)(1,2-diphenyl-1,2-dipropyl-1,2-disilanediyl)(3,5-dimethyl-2,4-furandiyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



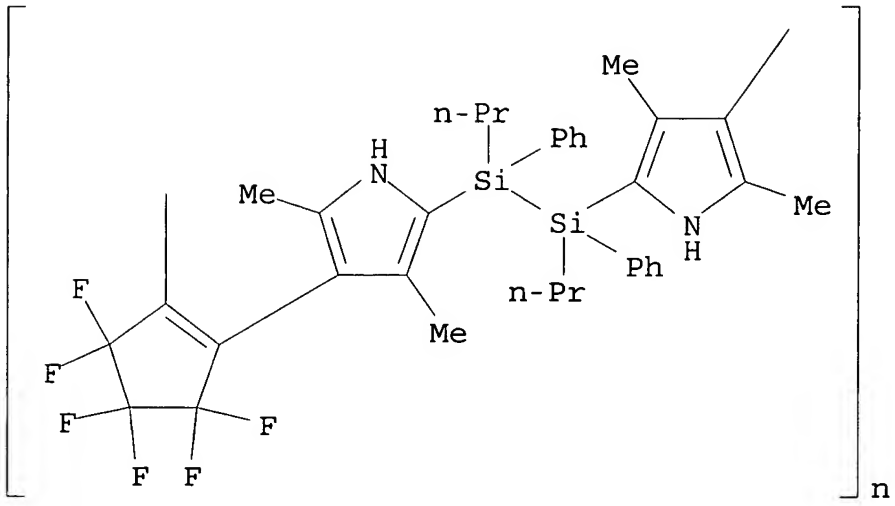
RN 264150-02-9 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-furandiyl)(1,1,2,2-tetraphenyl-1,2-disilanediyl)(3,5-dimethyl-2,4-furandiyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



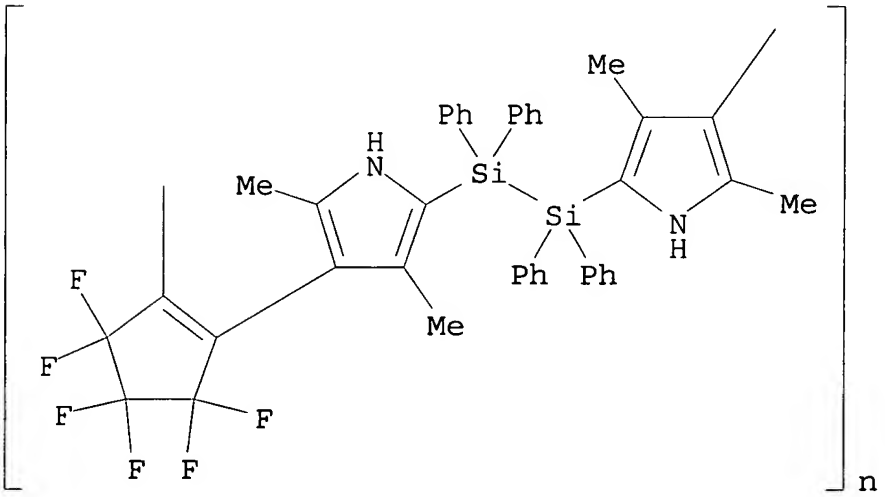
RN 264150-03-0 HCAPLUS
CN Poly[(3,5-dimethyl-1H-pyrrole-4,2-diyl)(1,1,2,2-tetramethyl-1,2-disilanediyl)(3,5-dimethyl-1H-pyrrole-2,4-diyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



RN 264150-04-1 HCAPLUS
CN Poly[(3,5-dimethyl-1H-pyrrole-4,2-diyl)(1,2-diphenyl-1,2-dipropyl-1,2-disilanediyl)(3,5-dimethyl-1H-pyrrole-2,4-diyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)

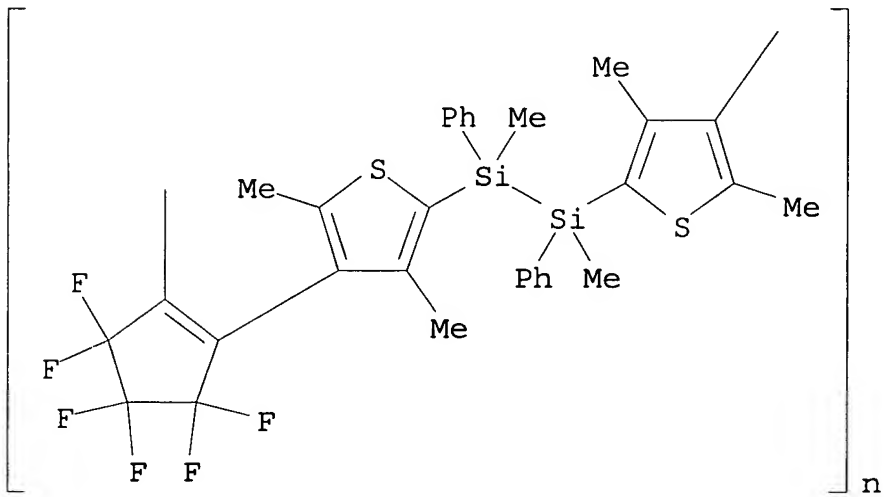


RN 264150-05-2 HCAPLUS
CN Poly[(3,5-dimethyl-1H-pyrrole-4,2-diyl)(1,1,2,2-tetraphenyl-1,2-disilanediyl)(3,5-dimethyl-1H-pyrrole-2,4-diyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



IT **264149-67-9P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(optical recording material using photochromic compd.)

RN 264149-67-9 HCAPLUS
CN Poly[(3,5-dimethyl-4,2-thiophenediyl)(1,2-dimethyl-1,2-diphenyl-1,2-disilanediyl)(3,5-dimethyl-2,4-thiophenediyl)(3,3,4,4,5,5-hexafluoro-1-cyclopentene-1,2-diyl)] (9CI) (CA INDEX NAME)



IC ICM G03C001-73
ICS C08G077-60; C09K009-02; G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
IT 264149-71-5 264149-73-7 264149-75-9 264149-77-1 264149-79-3
264149-81-7 264149-83-9 264149-85-1 264149-87-3 264149-89-5
264149-91-9 264149-93-1 **264149-94-2 264149-95-3**
264149-96-4 264149-97-5 **264149-98-6**
264149-99-7 264150-00-7 264150-01-8
264150-02-9 264150-03-0 264150-04-1
264150-05-2 264150-84-7 264150-86-9 264150-88-1
264186-79-0 264186-81-4 264186-82-5
RL: DEV (Device component use); USES (Uses)
(optical recording material using photochromic compd.)
IT **264149-67-9P**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(optical recording material using photochromic compd.)

L48 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2006 ACS on STN
1985:509079 Document No. 103:109079 Amorphous polymeric halosilane films. Sharp, Kenneth George; Stark, Leslie Diane; Chu, Hsien Kun

(Dow Corning Corp. , USA). Eur. Pat. Appl. EP 140660 A2 19850508, 19 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1984-307210 19841019. PRIORITY: US 1983-547156 19831031.

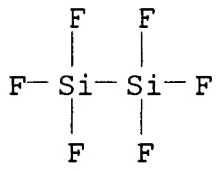
AB Polymeric glass films which are highly stable, **reflective**, and abrasion resistant with utility as semiconductors and optical and protective coatings, are formed on glass, ceramic, or metal substrates by vapor-phase decompn. of halogenated di- and polysilanes at 250-550°. Thus, a soda-lime silicate glass microscope slide was vapor-phase coated using Si2F6 as the reactant material. The resulting **reflective** 500 Å polymeric film had an absorption coeff. of 105/cm at 450 nm, a resistivity of 105 Ω-cm, and an elec. cond. that increased with temp. in typical semiconductor behavior and that was increased 4-fold upon exposure to a quartz lamp. The film was also weather-resistant and resisted abrasion by 0000 steel wool.

IT **98125-09-8 98125-10-1 98125-11-2 98125-12-3**
RL: USES (Uses)
(amorphous films, from halogenated silane decompn., for hard optical semiconductor coatings)

RN 98125-09-8 HCAPLUS
CN Disilane, hexafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

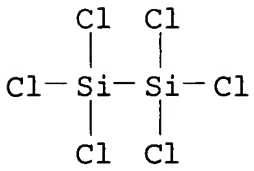
CRN 13830-68-7
CMF F6 Si2



RN 98125-10-1 HCAPLUS
CN Disilane, hexachloro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

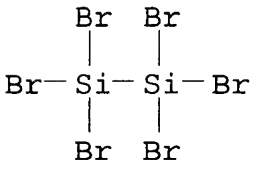
CRN 13465-77-5
CMF Cl6 Si2



RN 98125-11-2 HCAPLUS
CN Disilane, hexabromo-, homopolymer (9CI) (CA INDEX NAME)

CM 1

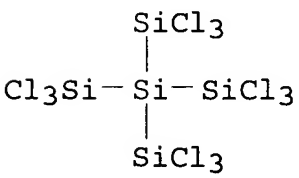
CRN 13517-13-0
CMF Br6 Si2



RN 98125-12-3 HCAPLUS
CN Trisilane, 1,1,1,3,3,3-hexachloro-2,2-bis(trichlorosilyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 50350-62-4
CMF Cl12 Si5



IC ICM C23C016-24
ICA H01L021-205
CC 57-4 (Ceramics)
IT Optical **reflectors**

(halosilane amorphous polymeric films, from halogenated silane decompn.)

IT **98125-09-8 98125-10-1 98125-11-2**
98125-12-3 98125-13-4
RL: USES (Uses)
(amorphous films, from halogenated silane decompn., for hard optical semiconductor coatings)

=> => d his l49-

(FILE 'REGISTRY' ENTERED AT 16:59:07 ON 05 JAN 2006)

FILE 'REGISTRY' ENTERED AT 17:10:05 ON 05 JAN 2006
E PHENOLIC RESIN/PCT
L49 16259 S E3
L50 8 S L49 AND L19

FILE 'HCAPLUS' ENTERED AT 17:12:13 ON 05 JAN 2006
L51 3 S L50
L52 1 S L51 NOT (L47 OR L41)

=> d l52 1 cbib abs hitstr hitind

L52 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2006 ACS on STN
1994:606871 Document No. 121:206871 Thermosetting resin compositions containing silane curing agents. Shimozawa, Hiroshi; Fujeda, Shinetsu; Hayase, Shuji; Nakano, Yoshihiko; Yoshizumi, Akira (Tokyo Shibaura Electric Co, Japan). Jpn. Kokai Tokkyo Koho JP 05271553 A2 19931019 Heisei, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-71990 19920330.

AB The title compns. with good heat resistance, low shear stress and low water absorption contain (SiR1R2)m(SiR3R4)n (R1-4 = monovalent org. groups; R1 and/or R2 contains phenolic OH; m, n ≥0 integers, m + n ≤12, m ≥2 when either one of R1 and R2 contains phenolic OH; m ≥1 when R1 and R2 contain phenolic OH) and org. compds. contg. ≥2 phenolic OH-reactive groups. Thus, a compn. comprising AER 745T (fire-resistant epoxy resin) 2.5, MB 3000H 16.0, tetra(p-hydroxyphenyl)hexamethyltetrasilane 5.3, PPh3 0.2, carnauba wax 0.3, carbon black 0.3, Sb2O3 2.0, powd. SiO2 73.0, and A 187 0.4 part was transfer molded to give test pieces showing glass transition temp. 201°, heat expansion coeff. 1.41 + 10-5 degree-1, bending strength (240°) 6.2 kg/mm2, flexural modulus (240°) 549 kg/mm2, melt viscosity (185°) 250 P, and water absorption 4659 ppm (135°/85%

relative humidity for 20 h).

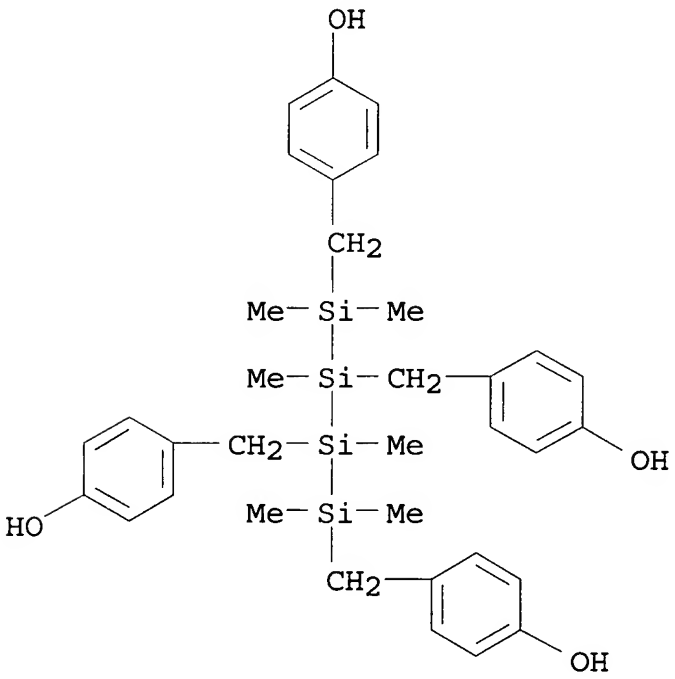
IT **158155-34-1 158155-36-3 158179-95-4**
RL: USES (Uses)
(crosslinked, heat-resistant, with good bending strength and low water absorptivity)

RN 158155-34-1 HCAPLUS

CN Phenol, 4,4',4'',4'''-[(1,1,2,3,4,4-hexamethyl-1,2,3,4-tetrasilanetetrayl)tetrakis(methylene)]tetrakis-, polymer with AER 745T and Sumiepoxy ESCN 195XL (9CI) (CA INDEX NAME)

CM 1

CRN 158155-33-0
CMF C34 H46 O4 Si4



CM 2

CRN 157243-01-1
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 3

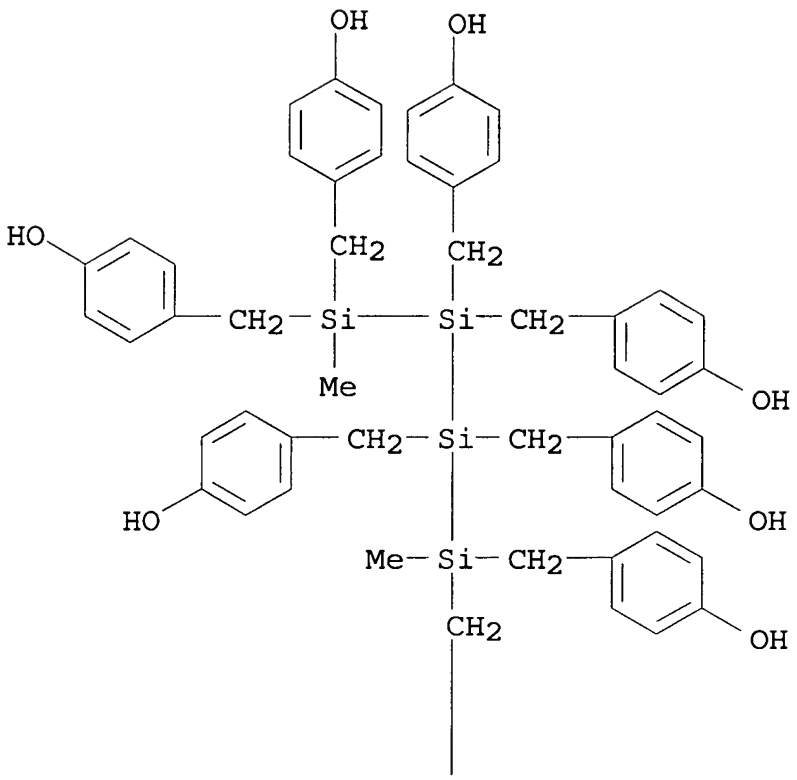
CRN 96231-83-3
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 158155-36-3 HCAPLUS
CN Phenol, 4,4',4'',4''',4'''',4''''',4'''''',4'''''''-[(1,4-dimethyl-1,1,2,2,3,3,4,4-tetrasilaneoctayl)octakis(methylene)]octakis-, polymer with AER 745T and Sumiepoxy ESCN 195XL (9CI) (CA INDEX NAME)

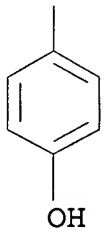
CM 1

CRN 158155-35-2
CMF C58 H62 O8 Si4

PAGE 1-A



PAGE 2-A



CM 2

CRN 157243-01-1
CMF Unspecified

CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 3

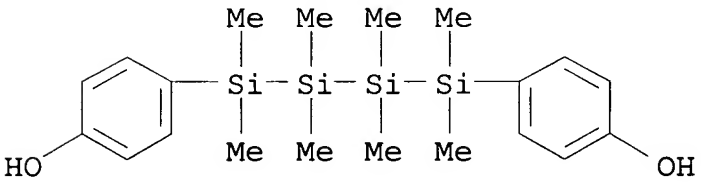
CRN 96231-83-3
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 158179-95-4 HCAPLUS
CN Phenol, 4,4'-(1,1,2,2,3,3,4,4-octamethyl-1,4-tetrasilanediyl)bis-, polymer with AER 745T and Sumiepoxy ESCN 195XL (9CI) (CA INDEX NAME)

CM 1

CRN 158179-94-3
CMF C20 H34 O2 Si4



CM 2

CRN 157243-01-1
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 3

CRN 96231-83-3
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C08L083-16
ICS C08G059-62; C08K005-54; C08L035-00
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 42
IT 158155-28-3 158155-29-4 158155-31-8 158155-32-9
158155-34-1 158155-36-3 158155-37-4
158179-93-2 **158179-95-4**
RL: USES (Uses)
(crosslinked, heat-resistant, with good bending strength and low water absorptivity)

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